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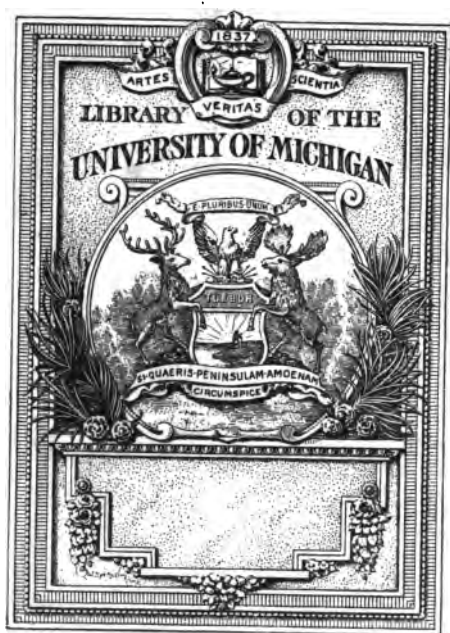
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15th ANNUAL REPORT
STATE COAL MINE INSPECTOR
MISSOURI
1901



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15TH ANNUAL REPORT
OF THE
STATE COAL MINE INSPECTOR
OF THE
STATE OF MISSOURI
FOR THE
YEAR 1901.



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LETTER OF TRANSMITTAL.

City of Jefferson, Mo., April 15th, 1902.

HON. A. M. DOCKERY, Governor of Missouri:

Sir—In obedience to the requirement of law, I have the honor to submit the Fifteenth annual report of the Inspector of Coal Mines.

Very respectfully,

CHARLES EVANS,

Inspector of Coal Mines.

INTRODUCTORY.

Notwithstanding the increased number of mines, employes, coal production and correspondence, the work in the field and office has been faithfully looked after and taken care of, and the Inspector has the satisfaction of presenting the Fifteenth Annual Report, not only within the limit of time prescribed by law, but with a far more satisfactory showing of the results from our coal mines than that of any preceding year. No period in the mining history of the State will begin to compare with the year 1901, in its growth and progress as may be evidenced in the number of new mines opened, the increased capacity and unexcelled equipment of the older mines.

The object sought in this report is to furnish such information relative to coal mine conditions, progress and improvement and offer such suggestions as may prove beneficial to operator, miner, and all those interested in mining and the further development of the industry and our splendid mining territory. The coal mine inspector has made over 600 inspections, unaided, the prime object of his inspections having been to maintain that condition of safety, sanitation and that volume of pure fresh air in our mines that would in all respects meet the requirements of the law relative thereto. The safety of the miner, to provide for him healthy surroundings and to make sure of a means of safe exit from the mine in the event of accident to either the hoisting or escape shafts, has been the especial aim and concern of the inspector; a confirmation of such efforts can easily be established by a reference to the inspector's notes concerning the numerous inspections and the table showing improvements made.

The large output of our mines is due as much to the increased capacity provided and the further development of mines already in existence, as can be attributed to the new mines opened. The condition of our mines generally, viewed from every desirable underground feature, is better than we have every known them to be in. Every modern and up-to-date appliance affording a greater degree of safety to the miner and that tends to facilitate the rapid and economical handling of the product, has been promptly availed of by our operators. In fact this

last year developed more voluntary betterments on the part of our operators in all matters pertaining to the health, safety and comfort of our miners than ever before witnessed; this in connection with the prompt compliance with the instructions given operators, has proven not only a great help to the inspector, but points to a most gratifying indication of that interest, which, in the end, must result in great benefit to both miners and mines.

Our miners—thanks to the prudent and conservative men at the head of their organizations—have done admirably, harmony and less friction has been more noticeable than for years, with the result that work has been more steady.

To Mr. George Richards, President of the U. M. W. A. of A., and Mr. Geo. Manuel, Secretary, as well as to very many excellent miners, we wish to return our most sincere thanks for valuable information furnished during the year, concerning the conditions prevailing in the mines. The information coming from such sources has greatly assisted the inspector, as it has enabled him to give direct attention to the mines most in need of attention, while a simple letter has answered every purpose in many other case. In this connection, attention is called to the fact, too generally overlooked, that there is but one inspector to look after this entire State and that it often happens that there are as many as six calls in one day to as many different sections of the State, all cannot be attended to the same day, so that we give preference to the larger mines where the most men are affected. The inspector may be relied on to give attention to each and every call made just as the opportunity is furnished him by the situation or condition of affairs; but it is impossible, for him to visit a number of places in different parts of the State on the same day, besides his duties are not confined to the inspection of mines only but to the inspection of scales, oils and the investigation of all accidents.

It is not only our great pleasure, but we feel it our duty to again most highly commend Mr. J. W. Marsteller, Secretary of the Bureau of Mines and Assistant Inspector, for the excellent service which he has rendered, in the preparation of the maps and statistical matter found in this report. His intimate association and connection with the work of the Bureau for the past 12 years, has made him so familiar with the duties of the office as to render the service which he performs for the State and the inspector almost invaluable. He at all times displays a deep interest in all matters connected with the mining industry, is exceedingly accurate in all of his work and his suggestions have proven most helpful in many instances. He possesses my full confidence to act

as my second self in all things, and in no single instance or act of his, has he shown that my confidence in him has been misplaced. The inspector having so large a territory to cover, it devolves upon his assistant to attend to most of the correspondence, to issue all notices to coal, lead and zinc operators, to keep a record of and examine all mine maps, boiler inspections, mine accidents and when his limited time permits, assists the inspectors in the inspection of mines.

REPORT.

This report covering the calendar year 1901, shows the largest coal production we have ever made in any one-year, also a greater number of men employed, more new mines opened, more improvements and a more satisfactory state of affairs in and connected with our mines than heretofore recorded.

The output of coal for the year was 3,813,527 tons, as against 2,995,022 tons for the year 1900, showing an increase of 818,505 tons. This product sold at the mines for \$4,716,331, against \$3,643,975 for 1900, an increase of \$1,072,356, or 29 per cent. The average price received at the mines per ton of coal was \$1.24, or three cents in excess of the previous year. The number of men employed in and about the mines during the winter season was 10,666, as against 8,698 the year before, an increase of 1,968 men. The actual number of miners in winter at work in the mines was 8,354 and during the summer 5,968. The average number of all men employed in and about the mines during the year was 9,226. There were 422 mules worked in the mines during the winter and 341 in the summer. The mines are entered by 165 shaft openings, 61 slopes, 88 drifts and 54 strip-pits or open cuts. Ventilation was furnished by the use of 73 fans, 124 furnaces and 150 by natural ventilation. The power was furnished by 6 electric plants, 102 steam plants, 146 horse power plants and 106 hand plants. The method or plan of working underground was by the long wall system in 171 mines and by the pillar and room plan in 164 mines. There were 100,622 kegs of powder consumed in the mines which cost the miners \$199,684.80.

There were 31 accidents in the mines during the year or two less than the former year with more men employed and a largely increased tonnage; of this number 15 were fatal and 16 non-fatal. Falls of roof and coal caused 48 per cent. of the accidents; powder explosions 16 per cent., mine cars 16 per cent., premature explosions 7 per cent., returning too soon on shot 6 per cent. and windy shots 7 per cent. One life lost for each 254,235 tons of coal mined and one non-fatal accident for each 238,345 tons mined.

TABLE I.—SUMMARY AND COMPARISON.

Comparison of the years 1900 and 1901.		1900.	1901.	- Increase.	- Decrease.
No. of coal producing counties.....		36	36	.....	.....
No. of mines and strip-pits operated.....		350	398	18	.....
No. of mines employing over ten men.....		138	148	10	.....
No. of fans in use during the year.....		61	73	12	.....
No. of tons of coal mined during the year.....		2,995,022	3,813,527	818,505	.....
Total receipts from sale of product.....		\$3,643,975	\$4,716,831	\$1,072,856	.....
Average price received at mines per ton of coal.....		1 21	1 24	.03	.....
No. of men employed in winter.....		8,698	10,666	1,968	.....
No. of men employed in summer.....		6,601	7,786	1,185	.....
No. of miners employed in winter.....		7,055	8,354	1,299	.....
No. of miners employed in summer.....		5,300	5,968	668	.....
No. of other employes in winter.....		1,643	2,312	669	.....
No. of other employes in summer.....		1,298	1,818	520	.....
No. of kegs of powder consumed.....		69,460	100,622	30,162	.....
Total cost of powder to miners.....		\$138,538	\$199,684	\$61,146	.....
No. of men fatally injured.....		10	15	5	.....
No. of men non-fatally injured.....		23	16	.....	7
No. of wives made widows.....		4	8	4	.....
No. of children made fatherless.....		7	14	7	.....
No. tons coal mined for each life lost.....		299,502	254,285	.....	45,207
No. tons coal mined for each non-fatal accident.....		130,218	238,345	108,127	.....
No. of new mines opened.....		12	18	6	.....
No. of old mines abandoned.....		4	11	7	.....

TABLE II.

Showing new mines opened and old mines abandoned during the year ending December 31, 1901.

County.	New mines opened.	Old mines abandoned.
Adair.....	By O. B. Havens & Co. Mine No. 2.....	
".....	Kansas City Midland Coal Co. Mines	
".....	Nos. 1 and 2.....	
".....	Rombauer Coal Co. No. 2.....	
".....	Kirksville Coal Co.....	
".....	Manufactures Coal & Coke Co. Nos. 1	
".....	and 2.....	
".....	Nineveh Coal Co.....	
Barton.....	Wear Coal Co. No. 10.....	
Bates.....		
Henry.....	By Tebo Coal Co.....	By Rich Hill Coal Co. Nos. 13, 20 and 21.
Lafayette.....	Lexington Coal Co.....	Tebo Coal Co.
".....	Valley, Millway & Summit Mines.....	Lexington Coal Co.
Macon.....	Murlin Coal Co. No. 10.....	Riverton No. 1, McDowell mines.
".....		
".....	Watson Coal Co. No. 3.....	Northwestern Coal Co. No. 4.
".....	Kansas & Texas Coal Co. Nos. 52-62-70	
Putnam.....	Blackbird Coal Co. No. 2.....	Kansas & Texas Coal Co. Nos. 48-56-68.
".....		Fielding & Son.
".....	By Mendota Coal Co. Nos. 9 and 10.....	
Ralls.....	Ralls County Coal Co.....	
".....	Perry Coal Co.....	
Kandolph.....	Morris Bros. Coal Co.....	
".....	Murlin Coal Co. No. 11.....	Murlin Coal Co. No. 7.
".....	Elliott Coal Co. No. 6.....	
".....	Higbee Coal Co. No. 2.....	
Ray.....	Fowler & Mackin Coal Co.....	
".....	Mercantile Coal Co. No. 17.....	
".....	Richmond & Camden Coal Co. No. 14.....	Richmond & Camden Coal Co. No. 3.
Vernon.....	Central Coal & Coke Co. No. 17.....	
".....	Rush Coal Co.....	

DEVELOPMENT AND IMPROVEMENTS.

No other year will begin to compare with the year 1901, in its extraordinary record of improvements and additions in the mines and mining plants. Not only will there be observed a greater number of new mines opened up and developed, but that a larger number of old mines have been remodeled, newly equipped with the most modern machinery and their capacities increased to an extent never before experienced in any one year. In fact such has been the nature of the improvements made, that our mines will compare most favorably with the mines of any mining State.

The inspector has made faithful effort to keep such record as would enable him to chronicle every detail associated with all improvements made during the year and invites the attention of all those interested in the progress and that high standard of equipment made necessary to keep pace with the times. The inspector highly appreciates the efforts made by our operators, to have their mines measure up to that standard of excellence in which they are found today; it is also a great pleasure to him to call to mind many improvements added which were the result of his own suggestions and he earnestly hopes that every one of them will be richly repaid for every dollar so expended and that their business may so improve, expand and enlarge, that not only they but the community at large may be greatly benefited.

Table No. 3 following will be found to contain a list of the improvements made:

TABLE III.

Improvements made.

County.	Coal company.	Improvements.
Adair.....	American Fuel Co.....	Sinking air-shaft, rebuilding furnace.
Adair.....	C. B. Havens & Co.....	Sinking escapement shaft at mine No. 1 and building stairway. New machinery at mine No. 2, engine and boiler house, two new boilers, blacksmith shop, new pit-head, one mile of railroad track, 50 new pit-cars, new fan constructed and about 50 houses and supply store built.
Adair.....	Kansas City Midland Coal Co.....	Opened two new mines, setting two sets of double engines at mines Nos. 1 and 2, set four boilers, two fans, constructed two miles of railroad, 100 pit-cars and 80 houses and supply store built.
Adair.....	F. I. Miller.....	Opened new slope and sunk shaft.
Adair.....	Rombauer Coal Co.....	Opened one new mine and equipped same with complete set of machinery, new engine and boiler houses, new blacksmith and machine shop, new fan cages and ropes, two miles of railroad track constructed, 40 houses and 50 new pit-cars built.
Adair.....	Manufacturer Coal and Coke Co.....	Two new mines opened, two sets of engines set and boilers built, tipples, trestle, platforms and head house constructed, blacksmith and machine shop built, four miles of railroad constructed, 75 houses and a supply store and 60 pit-cars constructed.
Andrain.....	Revan & Co.....	Sunk shaft and rigged it with horse power.
Andrain.....	Standard Coal Co.....	Building head house, platform, six chutes, blacksmith shop and a pump house.
Barton.....	C. F. Swigart.....	Sinking air-shaft.
Barton.....	Jos. Travis.....	Mine No. 10 opened with new and complete equipment, consisting of new machinery, boilers, engine and boiler rooms, new pit-head, ropes and cages, blacksmith and machine shops built, a fan set, one mile of railroad constructed, 100 pit-cars built, and 45 residences and a supply store built.
Barton.....	Wear Coal Co.....	Opened one slope mine.
Bates.....	D. McCombs.....	One new steam boiler and a steam pump; fan set in place of furnace.
Bates.....	Robt. Pearson.....	One steel hoisting rope and six new pit-boxes.
Bates.....	J. W. Steele.....	Sunk new air-shaft and removed fan.
Bates.....	Vernon Coal Co.....	Two new air shafts sunk at mine No. 15, a new electric motor to do the haulage, and two new hoisting ropes.
Bates.....	Rich Hill Coal Co.....	
Boone.....	I. H. Keene.....	Two new cages.
Boone.....	William R. Prayther.....	New platform erected; head house and blacksmith shop built.
Callaway.....	Stims Bros. Coal Co.....	One new steam boiler set and fan erected.
Grundy.....	L. M. Beaman.....	New steam pump.
Henry.....	Cooper Creek Coal Co.....	One new pump and pump-house.
Henry.....	Co-operative Coal Co.....	Sinking new air-shaft.
Henry.....	H. T. Demaree.....	Re-curling air-shaft, and 25 pit-cars built.
Henry.....	O. W. Field.....	Air-shaft sunk and tippie built.
Henry.....	John Hurst.....	Air-shaft sunk.
Henry.....	Wm. Rusk.....	One new rope and a pair of scales.
Henry.....	Brush Creek Coal Co.....	Sunk shaft 150 feet, put in two new ropes, two new cages, two sets of safety catches, and built 50 new pit-cars.
Jackson.....	Bonanza Coal Co.....	Two new cages put in; all entries brushed.
Lafayette.....		

TABLE III.—Continued.

County.	Coal company.	Improvements.
Lafayette.....	Consolidated Coal Co.....	Opened one mine, No. 8; replaced the horse-power rigging at mine No. 6 by steam power; new fan put in.
Lafayette.....	Carter Coal Co.....	New tippie and platform built; old track re-laid with heavy iron, and 100 pit-cars built.
Lafayette.....	Corder Coal Co.....	Escapement shaft sunk and ladder erected; two new ropes put in; cages remodeled and safety catches put on.
Lafayette.....	Dover Coal Co.....	Re-laid old wheel road with new and heavy iron; blasted 600 feet of rock down on entries.
Lafayette.....	J. A. Edwards.....	Opened new mine and equipped it with horse-power apparatus.
Lafayette.....	Beatty Farmers Coal Company.....	Equipped mine with an electric plant consisting of a generator 250 volts, 100 K. W., furnishing power to run five long-wall machines.
Lafayette.....	Beatty Farmers Coal Company.....	Making cut 3½ feet deep; shaft enlarged; machinery placed for hoisting in place of horse; 75 pit-cars built.
Lafayette.....	O. M. Laflin.....	One steam boiler and pump; wheel road re-laid with heavy iron; 40 new pit-cars built.
Lafayette.....	James Hudson.....	Opened a mine and equipped it with horse-power rigging.
Lafayette.....	E. Y. Hoffman.....	New mine and equipment.
Lafayette.....	Black Diamond.....	Air-shaft sunk.
Lafayette.....	Labor Exchange Association, Branch No. 306.....	Weight offices built, and another coal and dump tippie built.
Lafayette.....	Lexington Coal Co.....	One air-shaft sunk at Glen Oak mine and fan set; 25 pit cars built; four long-wall machines put in at the Valley mine, which are operated from a central station at Midway mine; 100 pit-cars built; electric plant installed at Midway mine and milling machines introduced; all equipment new; three miles of railroad constructed; 100 pit-cars made and 150 houses built and removed.
Lafayette.....	J. C. McGrew.....	Electric plant installed in mine, consisting of six link belt long-wall machines, two electric hoisting motors and provided with 150 K. W. generator driven by a 250-horse-power engine; all old iron in mine removed and relaid with new 16-pound steel rail; 50 new pit-cars built.
Lafayette.....	Thos. Walton.....	Entry given height by taking down rock.
Lafayette.....	Independence Coal Co.....	Nine houses built for miners; rock shot down on entries.
Linn.....	Marcelline Coal Co.....	Two new ropes and two new cages put in; fan repaired.
Linn.....	Bernard Schaefer.....	Two new cages put in.
Macon.....	Helmer Coal Co.....	Escapement shaft sunk and ladder erected.
Macon.....	James & Son.....	One new steam pump.
Macon.....	Kansas & Texas Coal Co.....	An electric plant installed at mine No. 61, consisting of a cut-off engine with a 100 K. W. generator and five electric mining machines; one new boiler set and 86 new houses built; self-dumping cages, automatic screen and Phillips box-car loader at mine No. 66, and 800 yards of railroad built.
Macon.....	Murlin Coal Co.....	Mine No. 10 sunk and equipped; engine and boiler room built, one mile of railroad constructed, blacksmith and machine shops built, 10 houses built for miners and 75 new pit-cars made.
Macon.....	Northwestern Coal Co.....	Pump shaft sunk at face of workings at old mine No. 1 and equipped with pumps and pipes connecting with mine No. 7; Phillips box-car loader erected at mine No. 8.
Macon.....	Watson Coal Co.....	Mine No. 3 sunk and equipped; engine and boiler room, blacksmith shop, fan house and pit-head erected; 1½ miles of railroad built and 25 pit-cars made.
Ralls.....	Clark Coal Co.....	Opened mine and equipped it with horse-power apparatus.
Ralls.....	Perry Coal Co.....	Opened new mine and erected horse-power rigging.
Ralls.....	Ralls County Coal Co.....	Sunk shaft and opened mine No. 2 and equipped same with horse-power rigging.
Putnam.....	Arnold Bros.....	Opened mine and iron track laid.
Putnam.....	Blackbird Block Coal Co.....	Rebuilt plant at mine No. 1 which was destroyed by fire; opened mine No. 2, engine set, head-house, tippie and platform erected; 25 pit-cars built and one-fourth of a mile of railroad constructed.

Putnam.....	H. Medlin Coal Co.....	Opened and equipped new mine.
Putnam.....	Rogers Bros. Coal Co.....	Air-shaft sunk and furnace built.
Randolph.....	Croft & Stackhouse Coal Co.....	Two new hoisting-ropes and springs set on safety catches at mine No. 3; mine No. 6 opened and shaft sunk and fully equipped with machinery and boilers; new engine and boiler rooms, pit-head, tippie and head-house; 50 pit-cars built and one mile of railroad constructed.
Randolph.....	Higbee Coal Co.....	Escape shaft sunk at mine No. 1 and stairway built; mine No. 2 opened up and shaft sunk, equipped and developed; engine and boiler rooms built; pit-head, tippie and screens constructed; blacksmith shop built and a fan set.
Randolph.....	J. J. Lewis.....	Opened a new slope.
Randolph.....	Morris Bros. Coal Co.....	Opened mine and equipped it with modern machinery; new pit-head and tippie-house, engine and boiler rooms built, a fan set, 75 pit-cars made and one mile of railroad track laid in switches.
Ray.....	Murlin Coal Co.....	Opened out mine No. 11 and equipped same with a pair of engines. Engine and boiler room built, winding platform 75 feet long constructed and chute screens and a hopper scale set; 1200 feet of track built and 50 new pit-cars made.
	Camden & Richmond Coal Co.....	Re-opened shaft at mine No. 3, remodeled and new foundation under pit-heads.
	Fowler Coal Co.....	Opened shaft and rigged it up with horse-power apparatus; 50 pit-cars made and about three-fourths of a mile of railroad built.
	Grimes Mine.....	One new hoisting rope.
	Hubbell Coal Co.....	Two new cages built.
	Jas. Loewen.....	Opened shaft.
	Mercantile Coal Co.....	Sunk shaft, developed and equipped mine No. 17; engine and boiler house built and pit-shaft erected. Escape shaft sunk and fan set; 50 new pit-cars made and one mile of railroad constructed.
	Murlin Coal Co.....	Installation of electric plant equipment complete at mine No. 30, consisting of one new Rohan boiler, Morgan & Gardner generator, a 10-ton electric motor to do the haulage, six new Morgan & Gardner long wall machines, two new cages and two new hoisting ropes, safety catches remodeled and replaced, engine house built, ladder built in escape shaft, one new steam pump, old wheel road taken out and relaid with 16-pound steel rail, and fifty new self oiling pit-cars made.
	A. F. Rankin.....	Shaft sunk and equipped with hoisting apparatus and a tramroad built to track.
	W. O. Ward.....	New hoisting tower built and gin repaired.
	H. Washington.....	Five new pit-cars built.
St. Clair.....	L. L. Griggs.....	Opened new slope and built one house.
	John Knerim.....	New shaft equipped with hoisting apparatus, with all new buildings, 10 horse-power boiler and a jet pump.
Vernon.....	Central Coal & Coke Co.....	Sunk shaft, developed and equipped mine No. 19; machinery engine house and pit head built, a fan set and a mile of railroad constructed.
	Rush Coal Co.....	Mine opened, shaft sunk and engines and boilers set, and pit head tippie and weigh-house constructed; escape shaft sunk and fan set; 50 pit-cars made and two miles of railroad built.

TABLE NO. 4.

Summary of classified improvements at the mines for year ending December 31, 1901.

Blacksmith shops.....	9
Boilers.....	21
Boller-houses (new).....	14
Cages.....	21
Catches on cages.....	8
Coal chutes.....	7
Drifts.....	1
Electric motors.....	4
Electric plants.....	6
Electric long-wall machines.....	26
Engines (new).....	19
Fans erected.....	14
Fan-house.....	1
Furnaces built.....	2
Horse-power.....	8
Head-houses.....	3
Houses built for miners.....	546
Iron track substituted for wood.....	5
Machinery (new).....	16
Machine shops.....	4
Mines (new).....	15
Pit-cars built and renewed.....	1,401
Pit-heads erected.....	11
Pumps.....	8
Pump-houses.....	2
Pump-shaft.....	1
Platform.....	6
Ropes (hoisting).....	21
Scales.....	2
Screens.....	3
Shafts (new).....	11
Shafts (air and escapement).....	20
Shafts retimbered.....	2
Side-track (feet).....	138,380
Stairways in escape-shafts.....	5
Store-house.....	4
Tipple-houses.....	10
Trestles.....	2
Slope-openings.....	4
Weigh-houses.....	2

CONVENTION OF MINERS AND OPERATORS.

The first annual conference of the miners and operators of the State was held at Kansas City during the month of June, 1901. Two former conventions had been held between the United Mine Workers' Association and the operators, but this was the first conference in which our operators and miners met in joint session, as district No. 25 has been established since the convention of the previous year. The object of these conferences are to meet, discuss and agree upon a scale of wages to govern the mine workers during the ensuing year. This conference was well attended, and brought about excellent results, but was not so harmoniously conducted as its worthy object deserved. The United Mine Workers' Association of America during its four years of existence has worked great good in behalf of the miners of this State. Wages, compared with a few years past, are higher, the conditions under which miners have labored have been somewhat mitigated and many of the hardships and disadvantages under which they have suffered have been banished, while the hours of labor have been shortened and greater comfort enjoyed. The old feeling of discontent has been greatly minimized, although not entirely exterminated, and I am safe in the statement that never in the history of coal mining in this State has a more perfect harmony existed between employer and employe than has been experienced during the past year. By the exercise of the same conservative and prudent management as that controlling the actions of the miners' organization during the past year, the organization will grow not only in power and influence within its own membership, but it will expand, gathering additions everywhere and in the end create public sentiment in its favor all along the line. That this may be the happy consummation of its aims and purpose, it is all important and an absolute necessity, that cool headed prudent men of the best ability be placed in its official and executive positions.

Our mines have been remarkably active throughout the State during the past year and all local troubles have been adjusted with very little friction or ill-feeling.

The officers of the miners' organizations have been conservative to that degree, that they have won the confidence of the operators and while we feel that the members of the organization have been greatly benefited, so have the operators.

The schedule of wages and the differential between the various coal seams and the class of labor performed, has been equally adjusted and no

one operator has any advantage over another in the market, as every operator under the arrangement has to pay a like equivalent price to his employes for work performed.

Following is the agreement arrived at and settled upon at the last conference, and has thus far, from what we can learn, proven satisfactory to both parties :

CONTRACT
BETWEEN
OPERATORS AND MINERS
OF
DISTRICT 25
United Mine Workers of America

*For the Year Beginning September 1, 1901, and Ending
August 31, 1902.*

Be it Resolved, By the operators of the State of Missouri, and Leavenworth County, Kansas, at a meeting assembled at Kansas City, Mo., this 27th day of July, 1901, that we hereby empower and authorize Geo. W. Kierstead, the chairman of our Scale Committee, to execute the following contract, which has been agreed upon and approved by the joint conference of operators and miners.

(Signed)

JOHN H. BOVARD,

President Missouri Operators' Association.

Adopted 8:30 p. m., July 27.

Be it Resolved, By the United Mine Workers of America, District 25, at a meeting assembled at Kansas City, Mo., this 27th day of July, 1901, that we hereby empower and authorize our president to execute the following contract which has been agreed upon and approved by the joint conference of operators and miners.

(Signed)

GEORGE RICHARDS,

President District No. 25, U. M. W. of A.

Approved by convention, July 27th, 1901.

GEO. MANUEL, Secretary.

CONTRACT.

WHEREAS, a contract between the operators of a portion of the coal fields located in the State of Missouri and Leavenworth County, Kansas, and the miners and mine laborers employed by them, represented by the United Mine Workers of America, has been in effect during the year ending September 1st, A. D. 1901; and.

WHEREAS, for the purpose of mutual protection, it is deemed for the best interest of all parties to continue a contract for another year ;

THEREFORE, this agreement made and entered into this 27th day of July, A. D. 1901, by and between the operators, by their duly authorized representatives, parties of the first part, and their employes, represented by the United Mine Workers of America, parties of the second part, WITNESSETH :

ARTICLE I.

That the following prices per ton of two thousand pounds shall be paid by the parties of the first part and received by the parties of the second part for mine run coal, for a period of one year from September 1st, A. D. 1901, to August 31st, 1902 :

SUB-DISTRICT I.

ARTICLE II.

Section 1. Macon and Randolph Counties, Missouri ; also all thick veins in Lafayette County, Missouri, prices as follows :

(a) Bevier, Ardmore, Huntsville, Moberly, Santiago, Higbee, Kimberly and associated mines 60 cents per ton for standard coal. For coal 3 ft. 6in. to 3 ft. shall be 65 cents per ton. Coal 3 ft. and under shall be considered as deficient work.

(b) Lingo and associated mines the price shall be 75 cents per ton ; this to include bench rock under all conditions.

(c) Waverly and associated mines, the price shall be 70 cents per ton.

(d) Higbee and Elliott and associated mines, (long wall work) the price shall be 85 cents per ton.

ARTICLE III.

In all mines in Sub-District No. 1 the price of entry yardage shall be as follows :

Section 1. Bevier, Ardmore, Huntsville, Moberly, Santiago, Higbee, Kimberly and associated mines :

(a) 7 ft. entry, \$1.02 per yard ; 12 ft. entry, 58 cents per yard.

(b) Brushing entries 5 ft. high from the rail, 58 cents per yard.

(c) Cross cuts between rooms to be paid for at 58 cents per yard.

(d) Cross cuts between entries shall be paid for at entry price.

Nothing shall be allowed for storing dirt, the yardage allowed being equivalent.

(e) Room turning, \$2.65 each, turned 6 ft. wide and driven 9 ft. before widening. All over 9 ft. to be paid for at entry price.

(f) Clay stratas or horsebacks, \$1.16 per foot.

Section 2. Lingo, Macon county. (Long wall work.)

(a) The price of yardage on entries and gob rooms used as air courses shall be \$1.38 per yard.

(b) All other conditions same as last year.

Section 3. Higbee and Elliott, Randolph county. (Long wall work.)

(a) For room turning, room considered turned as soon as switch crib is in, \$4.25 each.

(b) For room opening, \$2.50 per side, the company to clean the the road head.

(c) Building switch cribs, 55 cents each.

(d) Brushing in entries and rooms not less than 16 in. to be taken, 25 cents per yard.

SUB-DISTRICT II.

ARTICLE IV.

Section 1. In Lafayette county, long wall work shall be \$1.00 per ton, and the company to take all coal from the face where loaded and place empties to be re-loaded from where the coal was taken, except at Corder where the same conditions as for the past year shall prevail, except the cutting of dry corners in rooms, which shall be \$1.00 per yard. Questions concerning black jack and pushing of the home box at Corder shall be referred back to the local for settlement.

Section 2. Where black jack appears in a room at Higginsville, it shall be paid for same as mine run coal, the same to be guessed off by the pit boss and the miner in whose room it appears; the black jack to be put in the gob, provided there is sufficient room, otherwise to be loaded out and dumped.

Section 3. In Ray county (long wall work) the price shall be \$1.00 per ton.

Conditions to remain same as during the past year.

Section 4. In Clay county (long wall work) shall be \$1.00 per ton. Conditions to be the same as in Ray county.

Section 5. In Linn county, Marceline, (long wall work) shall be \$1.05 per ton. All sulphur and other impurities to be stowed in the working place where possible.

(a) Room turning, \$4.24 each.

(b) Entry turning, \$4.24 each.

(c) All other conditions to remain the same as last year, except that as soon as practicable the working face shall be 50 ft. to each room.

Section 6. In Jackson county, Brush Creek, (upper vein, long wall work) shall be \$1.05 per ton.

(a) All other conditions to be the same as were in effect last year.

Section 7. In Sub-District 2 at mines where machines are now or may hereafter be installed, the price for loading after the machines shall be three-fifths of the price paid for pick mining.

SUB-DISTRICT III.

ARTICLE V.

At Leavenworth and Leavenworth county, Kansas, prices as follows:

Section 1. 84 cents per ton for 2,000 pounds of mine run coal.

Section 2. That a uniform price for dead work shall be paid as follows:

(a) Entry brushing, \$1.15 per yard for entries 6 ft. high and 6 ft. wide at top and bottom.

(b) Sulphur in Entries: In addition to the regular price for entry brushing there shall be paid for sulphur in entries as follows:

6 in. at 50 cents per yard; 12 in. at 75 cents per yard; 18 in. at \$1.25 per yard; 24 in. at \$1.50 per yard; 30 in. at \$1.75 per yard; 36 in. \$2 per yard.

(c) For sulphur in rooms as follows:

6 in. at 50 cents per yard; 12 in. at 75 cents per yard; 18 in. at \$1.25 per yard; 24 in. at \$1.75 per yard; 30 in. at \$2 per yard; 36 in., \$2.25 per yard.

(d) For room turning, figures as follows:

For each room turned and driven into the break, \$4.00; for each entry turned and driven into the break, \$6.00.

(e) Each new room to receive two cars every other trip, one for coal and one for dirt.

(f) Entries to receive two cars every trip, one for coal and one for dirt.

(g) All falls in roadways and entries to be cleaned up by the company; also all fallen rooms to be cleaned up by the company.

Section 3. At all new mines where the workings have not taken the regular weight or break, the price now paid by the Carr Coal Mining company for mining coal, entry and dead work shall prevail in full force and effect until such time as said new mines have taken their regular weight or break, at which time the prices for mining coal, entry and dead work in sections 1 and 2 of article 5 shall govern.

All other conditions to be the same as was in effect last year.

SUB-DISTRICT IV.

ARTICLE VI.

Section 1. In Trenton and Grundy county and associated mines the price for mining shall be \$1.15 per ton.

- a) For brushing cross entries, \$1.00 per yard.
- (b) For brushing straight entries, 75 cents per yard.
- (c) For brushing all rooms, 50 cents per yard.
- (d) In rooms where soap stone and black bat exist, $1\frac{3}{4}$ cents for each inch in thickness shall be paid per yard in addition to the 50 cents per yard, measurement to be made in the center of the room.
- (e) Room roads shall be cut off at 175 feet. If made longer the company shall pay a reasonable compensation for additional length.
- (f) Where stump rock runs down in the bottom or up into the top, the company will pay \$1.00 each and furnish powder for taking the same out.

(g) Where cross entries are turned off from straights \$2.00 shall be paid for making room to turn such entry.

Section 2. In Novinger, Danforth, Midland No. 2 and associated mines, Adair county, the price for mining shall be 65 cents per ton.

- (a) 7 to 8 ft. entry, \$1.56 per yard.
- (b) 12 ft. entry, \$1.06 per yard.
- (c) Cross cuts same as entry.
- (d) Entry brushing, 53 cents per yard.
- (e) For room turning, \$2.91 each. Rooms to be 7 ft. neck. All over at entry price.
- (f) Clay and rock to be paid for as to be agreed upon between the miner and pit boss.

Section 3. In Midland No. 1 the price for mining shall be 65 cents per ton for coal 39 inches or over, 70 cents per ton for coal 36 inches to 39 inches, 75 cents for coal 36 inches or under.

All measurements to be made from bottom of coal to top of coal.

- (a) 7 and 8 ft. entry, \$1.56 per yard.
- (b) 12 ft. entry, \$1.06 per yard.
- (c) Cross cuts same as entries.
- (d) Entry brushing, 74 cents per yard.
- (e) For room turning, \$2.91 each. Rooms to be 7 ft. neck. All over at entry price.
- (f) Clay and rock paid for as to be agreed upon between the miner and the pit boss.
- (g) Provided that where the strata of coal at any place where any

entry is being run, measured as aforesaid, is 39 inches or upwards in thickness, the price of brushing in such part of such entry shall be the same as provided for at Danforth, Novinger and Midland No. 2.

Section 4. In Stahl and associated mines the price for mining shall be for mine run coal, 82½ cents per ton of 2,000 pounds.

(a) Price paid for dead work as follows:

7 ft. entries, \$1.21 9-10 per yard; 12 ft. entries, 79½ cents per yard; 14 ft. doorways, \$1.59 per yard.

(b) Brushing, first foot in thickness, 42 4-10 cents per yard. And for each additional foot in thickness, 31 8-10 cents per yard.

(c) Low faulty coal, \$3.18 per yard, company to get the coal; or \$2.12 per yard, miner to get the coal.

(d) Rock brushing in entries \$1.85½ per cents per yard.

(e) Rock brushing in rooms, \$1.32½ cents per yard.

(f) Room turning in room and pillar work shall be \$2.00 per doorway.

Miners shall brush to the rock when same does not exceed 2 feet in thickness and build two good walls.

(g) Company shall put in all cribs except in long wall or loose ended work, or pay for the same 50 cents per crib.

(h) In long wall the miners shall push loads to first switch; in room and pillar work to entry switch.

(i) Cutting rib in long wall shall be 40 cents per yard.

(j) Increased price for black bat and bony coal is waived, but the slips will be paid for at \$1.00 per foot (nothing under 3 inches) and payment shall be made when the room is clear of said slip.

(k) Slips that run parallel with the room, or nearly so, shall be paid at the rate of \$1.00 per foot thick, for every fifteen feet, nothing under three inches in thickness. The miner and the pit boss shall decide as to whether the slip is running parallel or nearly so.

(l) Company shall have the right to double shift narrow work when they wish, and to pay 25 cents per yard extra, all told, and local union not to interfere therewith.

(m) In case a place gets behind in long wall the pit committee will see that same is caught up.

(n) Iron tracks shall be laid in all new rooms by the company.

(o) When a room is driven 150 feet it shall be declared driven up, and if the skip entry is not ready to cut it off, the miner shall have the best vacant place in the mine, providing he picks his place the following day, and returns to his new branch when it is ready. If the company desires for any reason to drive the room more than 150 feet, the company

to take all coal from a point 150 feet from the working switch and place empty cars at the same point.

(p) When timbers are ordered by the miner before 10 a. m. they shall be delivered the same day providing the mine continues in operation, or the company is responsible for the room.

SUB-DISTRICT V.

ARTICLE VII.

Boone, Callaway, Audrain and Ralls counties, prices as follows:

Section 1. Price for mining at Vandalia, Farber, Martinsburg, Perry and associated mines shall be 91 cents per ton of 2,000 pounds.

Section 2. Dead work shall be paid for, and conditions remain the same in District No. 5 as prevailed in Vandalia last year.

DAY WAGE SCALE.

ARTICLE VIII.

Section 1. Prices for day work shall be as follows, covering the entire 25th district:

Sinkers, not less than \$2.40 per day or 30 cents per hour.

Machine runners, \$2.25 per day.

Track layers, \$2.25 per day.

Timbermen, \$2.25 per day.

Pushers, \$2.05 per day.

Trip riders, \$2.05 per day.

Cagers, \$2.05 per day.

Water bailers, \$2.05 per day.

Drivers (for single mule), \$2.05 per day.

(10 cents extra for each additional mule.)

Trappers, \$1.00 per day.

All other classes of underground work, \$2.05 per day.

Section 2. The operators shall have the right to employ boys to do such labor as they are able to perform, such as greasing, spragging, making up trips, or any other miscellaneous work not otherwise specified, if they so elect, and when so employed shall be paid at the rate of \$1 to \$1.65 per day as may be mutually agreed upon by the parties interested, provided, that no work be assigned to such boys that is recognized as a man's work.

Section 3. That the wages of blacksmiths at mines where construction work is being carried on shall be \$2.50 per day and the wages of mine blacksmiths at mines where repairs and sharpening of tools only is done, shall be \$2.25 per day, based on an eight hour day.

Section 4. That the wages of undox shall be 20 cents per hour.

ARTICLE IX.

GENERAL PROVISIONS.

Section 1. The scale of prices for mining per ton of 2,000 pounds hand picked, and run of mine coal, is understood in every case to be coal free from slate, dirt, bone, sulphur, black jack and other impurities.

The system of paying for coal before screening was intended to obviate the many contentions incident to the use of screens, and was not intended to encourage unworkmanlike methods of mining or blasting coal, or to decrease the proportion of screened lump coal and the operators are hereby guaranteed the hearty support and co-operation of the United Mine Workers of America, and all parties to this contract in disciplining any miner who from ignorance or carelessness, or other cause, fails to properly mine, shoot, or load his coal; therefore, in case slate, dirt, bone, sulphur, black jack, or other impurities are sent up by the miner, it shall be the duty of the trimmer of the car, or other person whom the operator may designate, to call the attention of the weighman and check weighman to the same, and the miner so offending shall, for the first offense, be suspended for one day, or fined \$1.00 at the option of the operator; for the second offense he shall be suspended for three working days, or fined \$2.00, at the option of the operator; for the third offense and each subsequent offense occurring in any one month, he shall be discharged, suspended, or fined \$4.00, at the option of the operator.

Any miner abusing or seeking to embarrass the trimmer, or any other person for performing his duty in this respect, shall be fined \$3.00 or discharged without recourse, at the option of the operator. All fines imposed shall be collected by the operator through the office, and shall be paid into the treasury of the local union, and under no circumstances shall fines be remitted or refunded by the local union.

Section 2. That the doctor's system shall not be compulsory, but shall be left optional with the men.

Section 3. That all necessary timber and rails shall be delivered at the working switch of each place by the company.

Section 4. The operators agree to check off all general dues and assessments of all miners and mine laborers when desired by any local union in district 25. The check weighman shall have a check number in order to receive his pay, the same as the miner, and all locals desiring a check number for dues and assessments shall be granted the same, and in no case shall compensation be charged for such deductions.

Where no check weighman is employed by the miners the company agrees to check off all dues and assessments of all miners and day men.

The check weighman or any person designated shall put into the office a list of all dues and levies five days before pay day.

Section 5. Eight hours actual work shall constitute a day's work, and it is definitely understood that this shall mean eight hours work at the face, exclusive of the time taken for meals or nooning, or in going to or coming from the face or place of working, and no local ruling shall in any way affect this agreement, or impose conditions affecting the same. All day, or company men, shall perform whatever labor the foreman may direct.

Drivers shall take their mules to and from the stables, harness and unharness them, and the time required in so doing shall not include any part of the day's work, their work beginning at the place at which they receive the empty cars, but in no case shall the driver's time be docked while he is waiting for cars at the point named.

Section 6. The color line shall not be a bar to employment.

Section 7. The price of powder shall remain at \$2.00 per keg during the life of this contract and the powder shall be of the standard brands, and of the best quality for the purpose for which it is used.

Section 8. That the erection of head frames, buildings, scales, machinery, railroad switches, etc., necessary for the completion of a plant to hoist coal, all being in the nature of construction work, are to be excluded from the jurisdiction of the United Mine Workers of America. Extensive repairs to, or rebuilding the same class of work, shall also be included in the same exception; provided, any or all members of the United Mine Workers of America, who may be employed at such construction work shall not be asked to work in conflict with the terms of this agreement as to hours worked or wages received.

Section 9. The operators in Leavenworth county, Kansas, reserve the right to discharge any miner or miners whose net ton of 2,000 pounds run of mine coal will not yield the same percentage of lump coal as that produced when mines were operated on the screened coal system. Said screens to be regulation dimensions. This section shall not apply where extraordinary squeezes or weight occur.

Section 10. Blacksmithing in the 25th District shall be paid for at 20 per cent. less than the prices that prevailed in the district last year, and under the present contract.

Section 11. That the pay day shall be semi-monthly, and payable not later than ten days after the close of each semi-monthly pay period. The company to furnish a statement of account for each pay day.

Section 12. There shall be a pit committee for each mine, said pit committee shall consist of three employees employed in the respective

mine which they represent. No person shall serve on any committee who has not been continuously for at least two months in the employ of the company operating the mine.

The pit committee in the discharge of its duties shall, under no circumstances, go around the mine for any cause whatever unless called on by the pit boss or a miner or mine laborer who may have grievance that he cannot settle with the pit boss.

Members of the pit committee employed as day men shall not leave their places of duty during working hours except by permission of the operator. The operator or his superintendent shall be respected in the management of the mine and the direction of the working force. The right to hire must also include the right to discharge. It is not the purpose of this agreement to abridge the rights of the employer in either of these respects.

The foregoing shall not be construed to prohibit the pit committee from looking after the membership dues or initiation in any proper manner.

Section 13. There shall be no new demands made locally that are in conflict with the provisions of this agreement, and no new conditions imposed affecting the same.

Section 14. Whenever a difficulty arises between a miner or mine laborer and an operator, or between the local union and an operator, which cannot be settled by the mine officers and the pit committee, the same shall be referred to the district executive board and the mine superintendent for an adjustment, and if said executive board and mine superintendent shall be unable to settle the same, then the parties interested shall each appoint two members for a board of arbitration, and these four, if necessary, when they cannot agree, shall choose a fifth member. The mine or mines, miner or miners, or mine laborers, shall continue at work, pending a decision of said board of arbitration, and whatever decision shall be reached by a majority of said board, shall be final and binding upon all parties to said arbitration.

Section 15. Whenever a miner believes he has been unjustly dealt with on account of the charge of producing too large a percentage of nut and slack coal in his run of mine coal, he shall have the right to appeal to a board of arbitration, and shall at once serve written notice of appeal on the superintendent; said miner to continue at work pending the settlement of this case before said board of arbitration and their decision shall be final and binding. Whenever any employe or employes at a mine or mines, working under this agreement, shall cause a stoppage of work in violation of the provisions of this contract, he or they shall be subject to discharge by the company affected.

Section 16. In case of any matter up for arbitration, said arbitration must take place as soon as practicable and a decision rendered within twenty days.

Section 17. The right of all operators of contracting any work in or about the mines, except the mining of coal, is conceded, and shall not be interfered with; the contractor to be governed by the scale as to prices and hours of labor.

Section 18. When a working day is cut short by premature firing on the part of the miner, he shall be discharged for the offense.

Section 19. All miners employed in room and pillar work and in long wall mines, are to use due and workmanlike care to keep their rooms safe. After a miner has properly timbered his room once to the satisfaction of the mine manager, he shall not be required to re-timber or care for the roadway or any part of said room between the switch and a distance of fifteen feet back from the face of said room. The miner agrees to be responsible for the care of said last 15 feet of his room, except where cross bars are necessary, then for the cross bars put up by said miner he shall receive the regular day wage per hour, or the company may perform such work at their option, which shall be done within a reasonable time, provided that in case a room should run into extraordinary bad roof, and after due care on the part of the miner, said room should cave in within the distance prescribed in the foregoing, then the company shall furnish the labor to clean up and secure said room.

Section 20. In the event of an instantaneous death by accident in the mine, the miners and underground employees shall have the privilege of discontinuing work for the remainder of that day and the day of burial. In case an operator elects to operate the mine on the day of a funeral, individual miners and underground employees may, at their option, absent themselves from work for the purpose of attending such funeral, but not otherwise, except in cases of fatal accident as above. The mine shall, in no case, be thrown idle because of any death or funeral, but in case of the death of an employe, or member of his family, any individual employe may, at his option, absent himself from work for the sake of attending such funeral, but not otherwise.

Section 21. If any employe or employes shall cause the stoppage of work in violation of this contract, he shall be subject to discharge by the company, without recourse.

Section 22. When at any mine of a party to this contract, there shall be three railroad cars empty and available to be loaded with coal, the men shall be required to enter the mine and put the same in operation.

Section 23. When a mine, or any part of a mine, is closed down,

throwing men out of work, they are to be employed in any other mine that may be operating at that time by the same company, they to be the first to be taken on when this place resumes work.

Section 24. When a man is taken from the face to drive a mule, he shall be paid \$2.25 per day.

Section 25. The district president in company with a national officer, shall go to Higginsville, Mo., as soon as possible, and investigate the grievance of Mr. Beatty, president of the Farmers' Coal company, in regard to men loading machine coal and pushing the same, and whatever decision is arrived at upon the matter, shall be lived up to by the men at Higginsville.

Section 26. In the third sub-district, Leavenworth county, Kansas, in all working places that are behind and deficient, the miner working in such places shall have the privilege of working the same at company wages instead of, as has been the custom, that the place be worked by company men.

Section 27. Where a miner works at the face by the day, his wages shall be \$2.25 per day.

Section 28. It is agreed that on the first Monday in April, 1902, the operators and miners represented by the executive board and parties to this agreement respectively, shall meet on that day in Kansas City, Mo., and go into session and continue in session to agree upon and formulate a new contract.

We, the undersigned representative of the operators, party of the first part, having been duly authorized by resolution, a copy of which is hereto attached and made a part hereof, and the representative of the United Mine Workers of America, party of the second part, having been duly authorized by resolution, a copy of which is hereto attached and made a part hereof, have read the foregoing contract and fully approve of the provisions therein contained, and bind ourselves and those we represent to the faithful performance of the same.

GEO. W. KIERSTEAD,
GEORGE RICHARDS,

President District No. 25, U. M. W. of A.

July 27, 11:13 p. m.

The reader in looking over the scale of prices as above, will discover no advance made in the price paid for mining except in the low coal districts, embraced by the counties of Clay, Grundy, Linn, Lafayette and Ray. A complete understanding of the conditions prevailing in all of our mines and my familiarity with the details connected with all underground work in the same, justifies the statement on my part—that the

miners at work in some of the mines where the high coal seams prevail, are benefited far more by the adoption of the general provisions of the new scale as above furnished, than they would have been by an advance of 5 cents per ton under the other provisions. After a careful examination of the scale agreed upon I am convinced it is based upon justice and equity and congratulate all parties participating in the good cause. The time and money spent in working out the details and reaching such satisfactory conclusions, we imagine has been more than offset by the splendid results following their deliberations and conclusions.

The organization now so generally known and recognized as the United Mine Workers Association of America, has proven itself the most successful organization so far introduced to coal miners. It has reached every mining camp in the State and its strength and effectiveness is most manifest. Judiciously managed it will undoubtedly prove a great factor for good, the welfare of the miner and a mighty power in the maintenance of peace, justice and harmony—diverted from such aims by the introduction of a radical, reckless and imprudent management it will fall beyond recovery—as it will array against it every element of decency, fairness and justice. There are limits to every movement and every organization, a nation that at one time boasted that it had conquered and controlled the then known world, was lost and disrupted by reason of its corruption and just such end awaits all organizations that are not based upon equal rights and justice. Organization is the natural sequence in opposition to oppression, people have banded together for mutual protection during all time and it is eminently proper and right for miners to protect themselves against greed, selfishness and oppression; but at the same time there should not on their part, be any attempt to engage organized effort to gratify personal greed and selfishness at the expense of others, for in so doing they themselves become the oppressors. Extreme and oppressive measures will not and cannot stand in this enlightened age.

The inspector because of his official position must of necessity occupy a neutral position and at best can do no more than advise. If called upon to give his opinion relative to the miners' great organization he could not do so in stronger terms than he has already done in this article, he would add, however, in the interest of the organization and its future success, that the most important consideration in that connection, is the cultivation of a spirit of fairness throughout the organization; the selection of its officials from men whose temperament, judgment and experience best qualifies them for the very important duties assigned them. All that class of men who are extreme in their views, excitable and always finding fault should be avoided and discountenanced in the make-up of organization officials.

The miners' union was first organized through the efforts of honest, conservative, fair-minded men, who realized the perils confronting the coal miner by that steady drift to starvation prices and no means of preventing it. The unions thus organized have been nourished and sustained largely by the character of men described, with the result that they are a power for good when wisely officered. In sending men to conventions pass over the heads of that young element of wild and untamed radicals and select the thoughtful, prudent, experienced miner that thinks right, acts right and wants right, then we shall witness that community of interests that means peace, harmony and justice.

If an experience extending over a half century and during all of that time intimately associated with the miners, working side by side with them in every kind and class of work performed in a mine and sharing with them all the hardships and trials met with in coal mines, counts for anything in forming an opinion of those things which constitute miners' rights and privileges; then I can without egotism, lay claim to a reasonably good opinion concerning such rights. Thus fortified and with the single aim in view of bettering the condition of my fellow miners and entrenching them in their organized capacity upon good solid ground—would at the very start, impress upon them the unquestioned necessity of organized effort based upon equity and justice. If the miner wishes to preserve his rights and secure his just dues, he must in order to combat the power and influence of powerful corporations, organize, as it is the surest and best defense that they can bring to their aid. Such organization controlled and governed by prudent men in their official position, will do more to ward off oppression and injustice than any other known method, and that, too, without any particular effort on its part, for its power simply, discreetly managed, cannot be ignored and no greater folly could be indulged in than that of permitting so powerful an engine to be wrecked by placing at the throttle impractical engineers. On the other hand, for there are two sides to all questions, a company investing its money in coal lands, in opening up and equipping mines, in furnishing employment for labor, and that company mutually agreeing to a scale of prices and living up to every requirement in that scale, is in the very nature of things entitled to certain rights also. Among which is the inalienable right to manage and control its own property without dictation from those who have no property right or legal interest therein. Now this does not contemplate the surrender of a single right due to the miner, for how can any one surrender that which he has neither hold upon or possession of. Neither do the rights as named furnish a company any right or power to use oppressive measures. The respective rights as mentioned and due to each, are separate and distinct propositions and this

view of the situation should never be lost sight of by either the miners or operators in formulating their plans for governing the work in a mine. No one should question the right of the miners in demanding just and due compensation for their services, that their working places be made as safe, healthy and as comfortable as conditions will permit them to be and that their hours of labor should be short to compensate in a manner for the dark, dismal and dangerous conditions surrounding their hours of toil. Then again there are miners in almost every mine (and their number unfortunately is increasing) who think it smart to originate any scheme which will in the end add an additional expense to the operator—never stopping to consider where such action in its last analysis will end; did they but think how easy it would be to trace it to the ton of coal, there to find that each cent added to the cost of handling a ton of coal cuts the margin of profit, and that it is this margin of profit that determines the price that can be paid for mining this same coal. All large mines must have their foreman, some one must be at the head to direct and control or chaos would prevail, and almost invariably these foremen come from the ranks of the miner. No man can manage any large enterprise, coal mines as well as other lines of business, who does not have system, discipline and respect shown the foreman, if things are to run smoothly; now because this foreman may have been a miner—is it possible that miners will for this reason show him less respect, than they would one placed over them who had enjoyed more of the better things of life? This I am sorry to state is an occurrence too frequently met with in our mines, and it should be frowned down by every well disposed miner.

To ignore a foreman and treat him with disrespect destroys discipline, with the result that the entire mine must suffer from that lack of attention due solely to a want of attention. No good foreman, if he knows his business, will mistreat a practical, well disposed miner—this being so it follows; that the deserving miner will command the fairest treatment, it will be observed the troubles originating in a mine do not originate from this class, except where some well defined wrong is attempted; but that it lies at the door of the devilish riff-raff, who, recognizing their incompetency, court troubles to even up as it were—it is this unworthy class that often causes reproach to be heaped upon the good name of a miner. With the great number of men in our mines, what folly it is to assume that they are all good men or good miners and the same holds good in all the walks of life. In all large aggregations of men there will be found the lazy, careless and unworthy of their class and no one will be bold enough to say that the miners are an exception to this rule. We do not imagine that the miners' organization will meet with any more success in

the attempt to place all miners on a common level, than has been the attempt to place the negro on a social equality with the white people. The miners' organization could not possibly strengthen itself more successfully than by weeding out the unskilled, the unscrupulous and the degraded. The inspector now finds himself confronted by a like problem—as he upon an investigation as to the cause of so many accidents in certain mines, found that the true cause was in the employment of so many unskilled men and he has determined to employ every agency, power and influence that he can command to not only stop that kind of business but to force such characters out of the mines, and the miners are expected to lend their influence and aid to this end.

The writer in his younger days with that spirit of unrest so common to those in search of the "White Mountains," was carried forward from place to place in this pursuit, to find himself frequently strapped and compelled to seek employment in order to replenish his empty pocketbook. In every such instance he was fortunate enough to find some employer good enough and kind enough to furnish him work, and he thanks God, that he has never yet felt inclined to harbor the thought that either one of the employers was an enemy. In this day and generation, however, we find an undue prejudice existing towards all employers, no matter whether they be good or bad; such prejudices as were never conceived by the industrious wage-earner, but born of those characters who are at war with good government, morals and decency, and largely assisted by that class in the editorial chair, who prefer, for revenue, to appeal to prejudice rather than reason, posing thus cheaply as champions of labor for no other purpose than to add to their subscription lists; breeding strife and discontent by warning the craft to prepare for the enemy by sharpening their steel and put down the tyrants and oppressors. They mean by the enemy, the tyrant and the oppressors, one and the same, or in other words, the employers of labor. Who are these employers and operators? Are there not some of them who have come from the ranks of labor and fully acquainted with their lot in life, and has the simple change from miner to operator worked such a wonderful transformation in his whole nature, that because he is now an operator that he must of necessity have become an enemy of his fellows, a tyrant and oppressor? No, he is just a man yet, like the balance, he has perhaps had better opportunities than some others; but the prime factor after all is the fact that wherever he was placed he took interest in his work, was active and energetic nad he got there Eli. Those things which are unamerican, unpatriotic and unjust will not work in this country and the most damnable thing labor has to contend with is that unrestrained effort of the mischief-breeders who are continually giv-

ing vent to their venom, filling the air with their warnings and insisting upon the sharpened steel to meet the enemy, when there is no enemy in sight but those who are forever and eternally manufacturing enemies—the same old class and element always found at the forefront when trouble is brewing and as much out of place at a peace conference as the devil would be in heaven.

That which in our opinion will prove of greatest good to the miners' organization and give to it the greatest possible leverage for maintaining the rights and privileges of the miners, is to secure the moral support of the good people of our State. In times like the present the conditions are ripe for such effort, as we find the small concerns in nearly all branches of trade being gradually restricted and the opportunity for that independence once enjoyed in business pursuits, vanishing as the hydra-headed trusts come more and more to the front. There are a far greater number outside the trusts than can be found in them and it is this great number that we wish to see the miners win to their side, the moral force of which they can command at all times by a righteous demand for what is right and due them. Miners' organization must be reasonable in their demands, discountenance anything that smacks of anarchy, firmly stand by its rights and as firmly grant that which is right.

MINE VENTILATION.

The inspector has again in order to justify his sense of duty, to refer to mine ventilation and it matters not if it should be said that the subject has been worn out and overdone by too many articles. He knows its vital importance to miner, mine, and its absolute necessity to any well regulated and conducted mine and that conditions are met with on his every trip that suggests to him the necessity of continually reminding mine managers of their duty in the matter of ventilation.

While there is not much to be added to former articles; yet there are new features arising each year, as well as new men assuming the duties of a mine manager, both of which command attention each year. The prime reason for further mention of the subject, is the fact that our mines have been greatly benefited by former articles, as their splendid conditions and wonderful improvement along this line attest. It is the knowledge of such results that spurs us on to new efforts, that we may still further do those things which tend to stimulate our mine managers to new zeal in the maintenance of the best possible ventilation in their respective mines. The result of our continued advocacy of certain methods tending to a more perfect ventilation, is readily noticed in the improved conditions prevailing in all new air shafts sunk; it will be observed that the

new shafts sunk for this purpose are double in sectional area and capacity, that of the former shafts. That ventilating fans have and are rapidly supplanting the furnace; that air-courses are not only very much larger, but that they are kept decidedly cleaner, also that the class of men yearly being appointed as mine managers, indicate that more attention is given to competency and qualification for such positions.

On a recent visit to a large mine in Macon county we found the ventilative current of air distributed throughout the mine by seven separate and distinct currents, each current providing ventilation for as many different groups of miners. To test the efficacy of the respective currents, the air meter was used and we found that each current was so evenly divided that each group of men were receiving their share of the air pure and fresh. At still another large mine in the same county where we found some 300 or more men at work, the ventilation was found so perfect, even on the return of the air, that we decided to examine it, with a view to giving the benefit of this experience in some such public way as we are now doing. In the first place we found that the air current was divided in the most practical way and conducted through the mine in four separate and distinct currents. This, however, was greatly assisted in its practical working by the care taken to make air-tight by properly stopping every opening and abandoned place permitting the escape of foul air or any impurities whatever—this then was the method and manner adopted in maintaining the healthy conditions found to exist in this mine and we cannot too highly commend a management that we find working such results in a mine of this size. It is a great pleasure to the inspector when he meets conditions like the above and his earnest desire is to find every mine foreman in the State exerting himself to place his mine in like condition. Where he finds that the proper ventilation is not provided, how is he, with the knowledge that it can be obtained, to account for its absence, other than classing the foreman as too lazy and indifferent or one that fears the loss of his position to that extent, that he would permit discomfort to his fellows by failing to perform his duties.

The coal mining industry of our State has been making rapid strides and keeps fully abreast with the progress of the times, and while our production is the most noticeable feature in this connection; yet the fact should not be overlooked that it is the progress, the improvements, equipments and enlarged capacity of our mines which has made this result possible. Our mines with their increased development and extension, have required in their operation an increased number of miners and we now find some of them, in which 300 men are at work. With so large a num-

ber of men at work deep down in the ground with but two means of exit in the event of trouble underground, occupying rooms covering many acres in extent or stretched along a face of coal sometimes thousands of feet in length, receiving the air they breathe from a down cast shaft while the impure air is forced out through the upcast, must to the thinking man, present a situation at all times demanding the greatest vigilance, practical knowledge and activity, on the part of those entrusted with the care and supervision of a mine in which there is so much at risk. This large number of miners must be supplied continuously with a current of air pure and fresh, if health and vigor is maintained; that this cannot be done when there is so much impurity generated in a mine, without systematic and practical manipulation of the fresh air current is plainly to be seen. With these conditions before us the proper ventilation of a mine becomes a matter of first importance in mine management and should command the best attention of mine officials and the employment of such men as are skilled in such duties, possessing practical training and ideas, industrious and conscientious in the performance of their duties. Men who are not thus qualified, are alike hurtful to miners and operators. Mine foreman cannot lay claim to any excuse for failure to secure the proper ventilation in their respective mines, except in rare instances, as they have the experience of scientific men who have made a life time study of all the conditions existing, the treatment of the same and the combined experience added, of old and experienced miners, foremen and mine superintendents and who have published for the benefit of all interested, the result of their investigations, together with the best methods to adopt, to meet almost every condition or emergency common to coal mines. With such information so easily obtained, what is to prevent a mine foreman from purchasing some one of the many books published on the subject, and acquainting himself with the details and methods which would be so helpful to him in his work?

The constructors of our ventilating fans in co-operation with experienced mine officials and experts, have been able to detect defects and remedy the same, until today we have one of the most perfect mechanical appliances that can be used in furnishing the best possible ventilation for our mines, and there is therefore no excuse for an operators sacrificing the health and comfort of his employes, because of poor ventilation when such an excellent remedy can be had as our modern fan.

Mine ventilation while apparently plain and easily understood by the practical and experienced mine foreman; yet we are sorry that we are compelled to state that many of them are found who neither understand the principle or attempt to pattern after those who do, and no bet-

ter evidence of this fact is needed than the conditions of their mines demonstrates. Do men with mines so conducted impress an inspector with the idea that they are possessed with practical ability, with a knowledge of underground work, that they have visited every working place to discover the conditions of the air therein each day and made certain that it was strong enough to overcome the deleterious effects of gases and other impurities, that they had made sure of air tight stoppings at all abandoned places and that all miners were receiving their due proportion of good air?

In the discharge of our duties as inspector all mines in the State are visited and inspected at least twice during the year; but nearly all of the larger ones much more frequently. We necessarily come in contact with all mine foremen and it is astonishing after our long experience how suddenly we can size up a foreman immediately after entering his mine—there are certain ear marks, that either mark him for good or bad. On entering some mines the foreman will always be found either looking after ventilation, the safety of rooms or entries, the repair of doors or other work demanding his attention; it is always a pleasure to meet such men for, as a rule, they have their mine up to the requirements of the law or deeply interested in bringing it up to that standard; such men are generally to me relied on and both miner and operator are benefited by his kind of work. At another mine we either find the foreman tinkering with some old worn out pump, on the pit top looking for an imaginary duty that will keep him out of the wet and in the fresh air; but far more frequently we find him comfortably ensconced at his headquarters along side of a double parting, hurrying the drivers out with their coal regardless of other conditions in the mines; what does he care about sanitary conditions so long as the output shows up well for the day—we pass him on our trip through the mine to find doors in need of repair and wasting the air so much needed in other parts of the mine; we attempt to pass through an air course but find it so well supplied with falls and caves as to furnish not enough room for the air or myself either to pass through, presently we reach a group of miners actually suffering for want of good air, we then turn our attention to the volume of air forced into the mine and at the intake it measures more than enough to supply the demands of the mine—but the men are not getting it. In a case like this there is no difficulty in finding a cause for the poor ventilation, the foreman has been so busy in hustling coal to the shaft bottom that he has not had time to see the air current properly conducted to the working places, to repair doors, stop leaks or clean out air courses. Foremen of this kind may secure the product while the mine is working,

there comes a time when his long delayed attention, forces an idleness for repairs to the mine and his increased product may prove a very expensive experiment for the operator, while the very life of his fellows have been undermined by his neglect.

We have exceptional cases to deal with as described, yet the mines of this State are as a rule as well ventilated and kept in as good sanitary condition as may be found in any state in this country. Our operators as a rule are very willing to accept the best methods for the betterment of the mines and endeavor to comply strictly with the mining laws of the State.

The most objectionable feature connected with the operation of our mines as I see it today is that pernicious practice indulged in of firing shots at the noon hour each day by the miners, who are themselves not only greatly discomfited, but sometimes most seriously affected by its results. There never has been or doubtless never will be a mechanical contrivance invented or a system of ventilation devised or made use of that will alleviate or mollify the evil conditions created by the firing of 150 to 300 shots in a mine at the noon hour each day. To clear a mine of the powder smoke, sulphur and fumes from so many shots, requires far too much time at the noon hour for the miners to submit to it without feeling that they are wasting time and to avoid which, they waste their lives away by going to work too soon thereafter. How strange this condition appears when it is known that the miners themselves are responsible for the creation of the bad atmosphere which they in turn inhale and poison their systems, this, too, in opposition to the most earnest protest of the inspector who cannot possibly have any other object in his protest than their own protection. I sincerely hope that the miners' organization will take up this question which so seriously interferes with the proper ventilation of our mines and the health of miners and end this practice of firing at noon. Were conditions like the above due to any rule emanating from operators, how quickly would a law be introduced to put an end to it, and no one would work harder for its passage than the inspector; but the miner should not forget that there are two sides to all questions, and if they are indulging in any practice which works difficulty in properly ventilating a mine, that they should be the first to protest, especially if there is no other way of escape from its evil effects. Follow the old injunction, "be sure you are right and then go ahead."

MINERS OILS

The burning of a good grade of illuminating oil is as necessary to the health and comfort of a miner, as it is in maintaining good ventilation; yet the miners continue to purchase an inferior grade under the

false impression that they are benefited in purchasing it at a cost of 30 or 40 cents on the gallon cheaper. I am constantly receiving letters from miners "all over the State, complaining of the inferior grade of oil used in their respective mines. We have also answered several calls in person to discuss the oil question in all its bearings, the evil effects of an inferior oil were pointed out to them and yet at one mine where there were 57 miners at work, a secret ballot was taken to determine their choice between a cheap 50-cent oil and the good winter strained lard oil at 95 cents per gallon; with the result that 19 voted for good oil and 38 of them preferred the common—this was so discouraging that I left the mine powerless to do them any good. The same thing was tried at another mine with similar results, and I concluded that as my efforts were so fruitless that they would have to assume for themselves the troubles they were bound to create.

While at Richmond last fall, we met a large number of the miners individually and in committees, all complaining of the inferior grade of oil used in the mines in the vicinity of Richmond. On my inspection of the mines at this place, we found abundant reason for their complaints. These mines are all worked on the long-wall plan and the air made to travel along the face of the coal or working place; it is no uncommon occurrence to find from 50 to 60 men along this face at work with the light furnished each man coming from a lamp on his cap that is filled with common oil that throws off a dense smoke, the fumes from which are suffocating—then added to this aggregated volume of poisonous fumes, the natural impurities found in a mine with the effects of the combined respiration from such a number of men, who not only inhale a vitiated atmosphere but expel it from the lungs still further vitiated, and we have an atmosphere that not only undermines the health of the miner, but hastens his death.

Noticing the pernicious effects resulting from the use of inferior or low grade oils used in the mines of that section, with but one exception, we suggested to many of the members of the miners' organization the necessity of taking up the oil question in their local unions and if by a full discussion of the matter they could create a sentiment against the use of low grade oil—to adopt a resolution which would require the use of the best grade of oil under a penalty, promising that in the event of such action and the inspector feeling that he had the co-operation of the miners, that we would enforce the law to the very limit. Some time after this suggestion was made, a letter was received from the secretary of a local union informing us that the oil question had been up in the meetings several times, but that there was so little interest manifested that nothing was accomplished; there was one suggestion made that might

work a betterment of the condition—that was to prevent the shipment of a low grade oil into the State. This would undoubtedly prove a good remedy, but the sooner the miners take the initiative and refuse to purchase the inferior grades of oil, the better, as dealers will not ship it in if there is no sale for it. It is true the laws of our State prohibits the miners from purchasing and using the low grades under a fine and penalty; but the inspector does not fancy playing the part of a detective and enforce the law so far as the miner is concerned, especially when that same law was enacted for their benefit.

The oil law to all intents and purposes is at present virtually a dead letter, and the miners are responsible for the failure to establish a grade—they are the chief violators of the law and the chief sufferers because of such failure.

At a recent visit to the mines at Kimberly, a very general complaint was made concerning the oil. We had a talk with the operators concerning the matter and they promptly agreed to keep constantly on hand a better grade; provided the miners would consent to buy it. We acquainted the local union with the result of our conversation and the promise given, but have never been informed of any action taken in the matter.

There is no law upon the statute books enacted for the benefit of the miner, his health and comfort that is more important to them, and yet there is no other law so grossly and shamefully abused and violated. For two years following the enactment of the law, the inspector earnestly and conscientiously endeavored to enforce its provisions, as he thoroughly appreciated the benefits which the miners would receive from its observance; but he met with such indifferent support from the miners—in fact he was blocked in his efforts to enforce the law, by the persistent use of inferior oils by the miners, this of itself made hopeless any good to result from further effort, and in despair the inspector suspended work in this matter. The remedy is now entirely with the miners, as we feel powerless without their co-operation and as our duties are sufficiently heavy already, our time if so inclined, is too limited to engage in the numerous prosecutions that would result if we attempted to enforce the law. The law is far-reaching, as it not only takes in the dealer who ships the inferior oil into the State, but the store keeper who buys and sells it, the operator allowing its use in the mine and the miner or other employe found burning it in the mines—all are liable to fine and imprisonment. Our miners hereafter were guilty of the use of an unlawful grade of oil, and at the same time demanding better sanitary conditions, should set an example by stamping out one of the chief agents responsible for unhealthy conditions—that of cheap low grade oils.

COMPARATIVE TESTS OF THE GENERATION OF STEAM BY COAL AND BY OIL.

The following clipping on the subject is taken from a publication called *Coal and Coke*, a journal devoted to the coal and coke industry of the country. The great oil gushers of Texas have created not only much excitement, but considerable speculation among coal operators relative to the possibility of oil supplanting the black diamond as a fuel. The tests made by the railroads as follows may prove of interest:

BEAUMONT OIL AS FUEL.

Since it was determined that the Beaumont oil consisted largely of ingredients most suitable for its use as fuel, a great many figures have been made of a comparative nature showing the relation of oil to coal, to wood, to sawdust, as fuel; and also treating of the constituent parts of the oil. One peculiarity of this Spindle Top oil is that one may get half a dozen different analyses of it, and all bona fide. It seems that the oil from different wells will give different figures for the component parts, although the variation is not great. To show the great power possessed by the oil as fuel, it can be compared with wood and coal in its heating qualities as follows: Wood contains 40 per cent. of carbon, coal contains 75 per cent. of carbon, while Beaumont oil contains 85 per cent. of carbon, thus showing its great superiority in heating quality. While on this subject, it is interesting to note that while the writer has interviewed a great many of the men who are actual users of oil, he has never yet found one who did not state that there was no lack of heat power; in some instances they got more than they wanted. Possibly a few examples of the saving that has been effected by the use of oil, as compared with coal or other fuel, will be of interest. The International & Great Northern Railway company has made the severest and most thorough test of the oil of any railroad in the state. The test was made on two immense freight engines weighing 83 tons on their drivers, and each of which was given exactly the same run to make, with as near as possible the same number of loads per trip, aggregating equal tonnage. The engine that burned coal was fitted with every known device and improvement for the economical consumption of fuel, including a Bates patent fire-door. The actual figures on this test are as follows, the figures being furnished especially for *The Tradesman*:

Engine No. 215, burning oil. made 3,322 miles, consumed 705½

barrels of oil, at a cost of $54\frac{3}{4}$ c per barrel, amounting to \$386.26; cost per mile, \$0.11.63; miles run per barrel, 4.71.

Engine No. 206, burning coal, made 3,322 miles, consuming 182.28 tons of coal, at a cost of \$2.71 per ton—\$493.98; cost per mile, \$0.14.87; miles run per ton, 18.22.

It must be borne in mind that the foregoing test was made with every advantage in favor of coal, whereas there were few advantageous conditions surrounding the oil, for it will be noticed that the oil is figured at a liberal price. Note also the long mileage of the test. Even under these conditions, it will be seen that the oil comes out victor by 21.8 per cent.; and undoubtedly when the International & Great Northern road gets storage tanks built, and a regular contract made for oil, and all other conditions have become as favorable as a permanent use of the fuel would warrant one to expect, the difference would easily be 35 per cent. in favor of oil. This is the hardest test that has been made, and is probably the most reliable. The International & Great Northern road also had to pay freight on its oil. Please remember also that the above figures are for two of the heaviest freight engines in the state of Texas. The oil in this case was consumed on the basis of 3.8 barrels to a ton of coal.

The Santa Fe has given out that 25 passenger and freight engines on a thirty days' run used 2,077 tons of coal, and covered altogether 87,063 miles, equal to about 42 miles per ton. This is a great mileage per ton, and must have been made principally with light passenger trains. Oil at 50c per barrel would cost 4.2c per mile, against 23.2c for the coal. However, these figures are not official, and probably are not correct, as 4c a mile for fuel is almost beyond belief, although undoubtedly a great saving will be made.

SCALE TESTING.

During the legislative session of 1899, a law was enacted which reads as follows:

"That the coal mine inspector of the State be ex officio inspector of weights, measures and scales used at the mines, and he is hereby empowered and it shall be his duty to test the scales used to weigh coal mined in the mines of this State at least every six months, etc." The inspector in connection with the numerous other arduous duties imposed upon him, has endeavored to fully comply with this added duty. During the past year a large number of tests were made and with pleasure make the statement that with very few exceptions they were in the main found correct. Where defects were found a very simple request was only necessary in each case to have them corrected. Ever since the enact-

ment of the law, my rule has been and faithfully carried out, to give the earliest attention to all complaints concerning the accuracy of scales. During the first six months of the year calls of this nature were very numerous; my experience proving this duty was one of the most undesirable, expensive both in time and money and the most unpleasant work associated with his duties as inspector. We could enumerate a large number of instances occurring during the past year, wherein we answered hurried calls to inspect mines and scales and found the complaints groundless, and the same calls followed in two or three weeks again, necessitating another tedious and expensive trip, some times making a trip from the Southwest corner of the State to the Northeast and back again. Without fail while out on an inspection trip of the mines we make it a point to inspect the scales, anticipating in this way, any possible difficulty that may lead to an early or for that matter a more remote call—it all takes time and prolongs our trips.

On entering upon our duty as inspector of scales we were poorly equipped with the necessary weights to make the tests and were compelled to resort to all kinds of methods to arrive at the facts or condition of things, as it is impossible for me to attend to other duties and be loaded down with the weights required. I have therefore very respectfully to request operators, that they keep a set of United States standard test weights at the mines. These weights can be purchased for a small amount of money, they will prove a benefit and a satisfaction in testing when disputes arise, or for the information of the operators in testing the accuracy of the scales when the inspector is not at hand—then when we are present it will prove a great convenience.

STRIKES.

The inspector in connection with his other duties is also expected to give special and particular attention to strikes, reporting upon them in detail and noting each individual strike occurring at our coal mines. During the year 1901, but very few strikes occurred and the majority of these were unimportant, lasting not to exceed ten or twelve days.

Of all the strikes that did occur but two were due to a demand for increased pay, viz.: The Co-operative Coal Co., in Henry county and at the Carter Coal Co., in Lafayette county, in both of which the miners were successful. The facts are that in the majority of instances during the year the miners won out on the strike. The strikes originating in Audrain, Ralls and Lafayette counties, were due to a misunderstanding or interpretation of the scale adopted at the Kansas City convention—they were readily righted and at the time of our preparing these notes

may be called settled and all working smoothly and harmoniously between employer and employe.

The following references to strikes by counties—point to the cause, duration, number of men engaged in them, the name of operator or mine where the strike occurred and how the strike terminated.

AUDRAIN AND RALLS COUNTY STRIKES.

The mines at Farber, Martinsburg, Perry and Vandalia in above named counties, comprise what is known among the miners as Sub-District No. 7. The miners of this district came out on a strike about the 1st of September, because the operator required the miners to do the brushing on the room-wheel roads; this the miners claimed was not contemplated by the Kansas City scale. After the miners had been out about 20 days the matter was submitted to the State Board of Arbitration for settlement. This Board decided in favor of the position taken by the operators. The men abiding by the decision returned to work, there were some 200 or more men involved in the strike.

BATES COUNTY.

On or about the 15th of November, 1901, about two-thirds of the miners employed by the Rich Hill Coal & Mining Co., in its mine No. 19 stopped work and brought on a strike. Upon an investigation of the causes leading to the trouble, we learned that some of the miners agitated the question of a check-weighman, and while there was a wide difference of opinion among them, yet the great majority favored the employment of a check-weighman and made demand upon the superintendent of the company that the check-weighman be put on and that his pay be collected by the company in the same manner that the pay of the doctor and other bills are collected of the miners. The refusal of the superintendent to accede to the request made, created a very bitter feeling between him and the major portion of the miners, which finally resulted in a suspension of work on the part of two-thirds of the miners, the other third continuing at work. The failure to make the strike general caused ill-feeling and guards were provided for the miners who continued work; this state of affairs run along until about the 4th of December, when there was a clash between the strikers and guards. The Governor promptly called the State Board of Arbitration together and had it proceed to Rich Hill, to arbitrate the matter if possible. On the 9th of December the Board succeeded in making a settlement and the men returned to work. There are a number of mines in the Rich Hill field that sell their product straight out to the Rich Hill Coal Co., and as mine No. 15 is the

property of this company and the largest mine in the district this caused the fight to center around it, when the miners of No. 15 went out on a strike, the other miners working in mines that sold the product to the Rich Hill Co., went out with those at No. 15 from a sympathetic standpoint and altogether there were about 500 men on a strike, while about 100 remained at work. As already stated the trouble was occasioned over the employment of a check-weighman; but back of all that remains the fact, that the trouble was the outcome of efforts made by leaders in the United Mine Workers' Association, to bring the entire Rich Hill field into this organization. On recent visits of inspection to this field, it was not difficult to recognize the success of the leaders of this organization in the accomplishment of their aims as I found the camp well organized. The inspector believes in and endorses labor organizations, having been a member and a promoter of them and having supported them all through life. He is firmly convinced of their absolute necessity in the preservation of the rights and welfare of the miner. Let any fair-minded man read the Constitution of the United Mine Workers' Association of America, and if he discovers anything therein based upon other than exact justice between man and man we shall be greatly disappointed. Thoughtful, prudent officials at the head of this organization and its branches, will cause it to grow in favor among all classes and its opportunities for doing good are very great.

The controversy at Rich Hill, last December, between the miners at mine No. 15 and the mine officials was very bitter while it lasted and a strike was precipitated from no other cause than a lack of diplomacy, good judgment and a little more modesty on the part of the mine officials. When a mine official having the power to act for his company in any dispute which may arise between employer and employe, assumes that he is possessed with an infallible judgment, that his ideas of right must prevail no matter how the poor miners may construe the situation and that he by reason of his position must be recognized as the arbiter of their rights and privileges, he simply makes plain his arrogance and his indisposition to be reasoned with by his subordinates.

The miners employed in all the mines about Rich Hill were organized some time prior to the time, when the miners at mine No. 15 were taken into the union. After the miners of the last named mine were admitted into the organization, the changes and remedies requested of the mine officials were simple in their nature, just and proper, embracing no radical departure from existing rules; but just some common-place requests that a prudent and judicious mine official would have accepted had he the true interest of his company at heart, but unfortunately his

pompous self-glorification stood in the way, for should he promptly accede to the requests made he would loose an opportunity to exploit his great importance. There was not a dollar at stake either to win or loose no matter which way the question was settled, neither did the requests of the miners contemplate the surrender of any company rights; they simply asked that they be granted the same privileges at mine No. 15, that were ruleable at other mines in the district. While we do not think it right to deduct in the office of the company from the miner's pay any amount that the miner does not consent to over his signature, yet we can see that there is just as much propriety in the company withholding from the miners' pay, the dues they may request collected for the support of their organization, as it is to collect on coupons issued by outside storekeepers—this view of the case cannot be reasonably disputed.

The Rich Hill Coal Co. operates mines in Arkansas, Indian Territory, Kansas and Missouri, employing in the aggregate 10,000 men or more, all under the management of Maj. R. M. McDowell, of St. Louis, and we believe him one of the most capable men in America today engaged in the coal mining business.

He is thoroughly honest, very conservative, practical and a man of great experience. There are less strikes and less trouble among the employes of the great number of mines under his control than is experienced by any other coal company west of the Mississippi river. No one regreted the unnecessary trouble at Rich Hill more than Major McDowell. The miners employed in the mines of this company in the several states mentioned, have been harmoniously at work for the last two or three years with little or no friction until the difficulties at mine No. 15 arose, this caused quite a commotion throughout the mining districts of the State and considerable loss to the company; but it is hoped the experience will prove a warning to all who were interested.

The employes of the Central Coal & Coke Company, Wise Coal Company and the Pearson Coal Company, all went out on a sympathetic strike on account of mine No. 15 strike. About 500 men were out during the strike, which lasted 25 days and terminated in a compromise.

CLAY COUNTY.

The miners in the employ of the Missouri City Coal Company came out on a strike on the 4th of September last, because of a refusal on the part of the company to take out what is known as the "home box" like it did all the other boxes loaded at the face. The men continued the strike until the 20th of the same month, at which time the officers of the miners' organization decided in accordance with the scale and its provisions in

favor of the operators. The men returned to work on same terms and conditions formerly obtaining. Fifty men took part in the strike lasting about two weeks.

HENRY COUNTY.

The miners at work for the Co-Operative Coal Company at Lewis Station came out on the 15th of September last, on the demand for an increased price of ten cents on the ton for mining, remaining out until the 2nd of October. The company conceded the advance and the men returned to work. About 25 men took part in the strike.

The miners in the employ of D. B. Pigg, near Lewis Station, came out on a strike on the 15th of August last on a refusal of a scale to weigh their coal. After being out until the 5th of September they returned to work, having received the scale and gained their point. There were 20 men involved.

LAFAYETTE COUNTY.

The miners employed by the Bonanza Coal Company, the Consolidated Coal Company, the Farmers' Coal Company and the Lowney Coal Company, as well as all others in the mines surrounding Higginsville, came out on a strike on the 6th of September last, because of a misunderstanding in the matter of pushing out the "home box." The executive officers of the miners' organization compromised the difference and the miners returned to work after being out two weeks. There were 250 men engaged in this strike.

The miners at work for the Carter Coal Company, near Wellington, struck for an advance in the price paid for mining on the 1st of September last. After being out eight days the advance was granted. About 50 men were engaged in this strike.

The employes of the Dover Coal Company came out on a strike September 1st last because of differences concerning the intent of the scale adopted at Kansas City. After being out about 30 days a consultation was had, resulting in the men returning to work on same terms and conditions existing prior to the strike. About 50 men were involved in the strike.

The employes of J. C. McGrew came out on a strike on the 1st of November, 1901. A falling short in the mine weights was claimed, the operator demanding more weight in order to have the cars hold out. The miners struck, refusing to comply with the demand. Officers of the miners' organization appeared upon the scene and agreeing to see that mine weights would hold good with the railroad weights, the men returned to work. There were 150 men involved.

MINE LEGISLATION.

SUGGESTIONS AND RECOMMENDATIONS.

The mining laws of this State are without question as far-reaching and as effective in providing the protection of the life and limb of the miner as can be found in the laws of any mining state in this country. The gradual decrease year after year in the number of coal mine accidents is the strongest evidence that can be furnished of the good accomplished and the effectiveness of the laws; yet in our opinion several new laws should be enacted, while some of them in existence should be repealed and others amended, with the purpose in view of still further reducing the number of accidents in our mines. To this end your inspector respectfully submits and recommends the following:

In order to secure and maintain a proper and sufficient amount of ventilation in coal mines, that the health and safety of the miners may receive additional protection, it should be required of all coal companies, operators or agents in charge of coal mines in which 50 or more men are employed, shall have added in addition to the usual mine foreman, what we term an over-man, said over-man to be constantly employed and who must be a miner of at least five years' actual experience in coal mining, thoroughly practical, and competent to intelligently perform his duties herein prescribed. The duties of said over-man shall be to visit each day, every working place in the mine or mines when in operation; he shall give special attention to and carefully watch and look after the ventilative current of air and all appliances connected therewith, making it his business to see that all doors are properly hung, that they are located at the proper place, that the same are in good repair and working order, and that additional doors are placed where and when needed; he shall be required to pass through every foot of air-way each day and see to it that all air-courses are kept clean and free from all obstructions of any nature and that as the underground work of the mine is advanced by excavations further into the coal field, it shall be his duty to see that the proper break-throughs are made in accordance with the law relating thereto; he shall see that all loose rock or other unsafe material of any kind that may be found hanging overhead either in the working places of the men, or entries or haul-ways, is taken down promptly or the same made secure by properly timbering the same. The over-man is required to see that a sufficient amount of props, caps and timber of a suitable size—sawed or cut square at both ends and as near the length needed as may be practicable are constantly kept where the necessities require them.

Said over-man upon finding an employe wholly incompetent to protect himself and his working place and who may be endangering the lives of those working near him, it shall be his imperative duty to at once place him under the care and supervision of a competent miner or discharge him immediately. In the opinion of the inspector a law covering the foregoing would result in greatly lessening the number of accidents and the extra expense in the employment of such over-man would prove small indeed compared with the good results obtained.

Have also to suggest that sections 8826 and 8827 be again repealed and that the same be so amended as to make them read as they were originally enacted. These sections have heretofore been known to the mining fraternity as the shot-firing law and before they were repealed constituted one of the best laws ever enacted for the protection of the lives of coal miners. Its constitutionality had been tested in our courts and was readily enforced wherever conditions demanded. During the session of 1901, a bill was introduced and passed repealing and amending said sections in the effort to have certain parts of the original apply to lead and zinc mines as well as coal. In the dissection and reconstruction process it was changed as to be altogether inoperative so far as coal mining was concerned. The intention of the author of the change was no doubt to benefit the lead and zinc miners; but the coal miners were lost out in the deal. The law as it now stands could not be tortured into anything resembling its former requirements and is worthless and meaningless when applied to coal mines. Lead and zinc mines are operated upon distinctly different methods with altogether different conditions prevailing under ground. Laws governing the respective mines should clearly read lead and zinc or coal mines and should not except in rare instances refer to all mines, as it often happens that which is good for one kind of a mine is just the opposite for the other. Would suggest in this connection that members of the Legislature on mining committees call into their meetings practical miners to confer with them. The coal miners of this State had a miners' committee present during the entire session of 1901, to look after legislation; they were intelligent, practical men and could have afforded all needed help and could have furnished all the information required.

I would further suggest and also recommend that section 8811 which establishes a code of signals for all mines be so changed that the code as it now stands be so changed as to eliminate coal mines—and that the section be so amended as to provide the following code, applicable only to coal mines:

One Bell—Hoist coal or dirt.

One Bell—To stop when the cage is in motion.

Two Bells—Lower cage.

Three Bells—Hoist men. After ringing three bells and before the men get on the cage the engineer shall blow the whistle twice in answer, then men shall get on cage, ringing one bell for ready.

Four Bells—Hoist mules.

Men in coal mines have grown old accustomed to the above signals, while largely the men in lead and zinc mines are accustomed to the signals under the present law. In fact the change for the coal miners was so radical that I feared to enforce the law—men are such creatures of habit that I doubt not accidents would have happened had the law been enforced. A code of signals is a good thing, as men going from one coal mine to another run no risk. There is another provision in the section relative to covering cages with boiler iron that should be changed. Would suggest that the depth of shaft requiring cages to be covered where coal is hoisted from mines by horse power be changed from 100 feet depth to 25 feet in depth.

Section 8828, having reference to the practical miner, is a good law if it could be enforced, but it must be changed if it ever becomes effective. As the law now stands it places the burden of the duty of examining all applicants as to their qualifications before being allowed to work in a mine on the shoulders of the inspector or some one whom he may designate. Men enter some of the larger mines every day that require examination; but it is a matter of utter impossibility for the inspector to perform such duty without neglecting other more important duties and he cannot designate others to act for him, as there is no fund provided to pay for work of this kind. I see no way out of it except the miners' organization take the matter up and place the work in the hands of the pit committee. Then I could designate the chairman of that committee at each mine to act as examiner of doubtful applicants presenting themselves for work. In this way only, do we see any chance of enforcing this law. In some of our mines this method is practiced and with entire satisfaction.

HEATING VALUES AND PROXIMATE ANALYSIS OF MISSOURI COAL.

We are indebted to Mr. J. H. Waters, deacon and director Agricultural Experimental Station, State University at Columbia, for the following tables showing the heating values and proximate analysis of Missouri coal, as prepared by Professors C. W. Marx, mechanical engineer, and Paul Schweitzer, chemist:

EXPLANATION OF TERMS.

A heat unit is the quantity of heat required to raise the temperature of one pound of water, at its maximum density, one degree Fahrenheit. The expression from and at 212 degrees F. means that the water is taken in at a temperature of 212 degrees Fahrenheit and evaporated at atmospheric pressure. Thus all the heat is used to evaporate the water. This is merely an arbitrary standard used in boiler testing.

In table No. 1, the column headed heat units per pound of coal is the maximum number of heat units that one pound of coal will yield when burned in a furnace where there are no losses of any kind. The number of pounds of water that a pound of coal will evaporate from and at 212 degrees F. depends upon the efficiency of the boiler and furnace. The efficiency of boilers in our western states with the ordinary furnace and setting generally varies from 50 per cent. to 60 per cent., but in a great many cases it is far below 50 per cent. With mechanical stokers, uniform duty, well designed boiler, and well designed furnace, an efficiency of 70 per cent. is easily maintained. Assuming a boiler efficiency of 60 per cent. the last column in table 1 was computed. It shows the number of pounds of water that one pound of the various coals would evaporate under favorable conditions with such an efficiency (60 per cent.), the water being taken in at 212 degrees F. and evaporated at atmospheric pressure.

Table No. 1 shows the rank of the coals arranged according to their calorific value.

I.—TABLE SHOWING CALORIFIC VALUE OF MISSOURI COALS.

Rank.....	Name of mine.	County.	Location.	Thickness of vein in inches.....	Heat units per pound of coal.....	Pounds of water evaporated from and at 212° F. per lb. of coal. Boiler efficiency 60 per cent.....
1	No. 8, Western Coal Co.....	Barton.....	Near Minden Station.....	36	13763	8.55
2	No. 3, Weir Coal Co.....	Jackson.....	Near Vernon Station.....	36	13759	8.55
3	Brush Creek Coal Co.....	Bates.....	3 miles southeast of Kansas City.....	16	13710	8.52
4	Upper Vein.....	"	5 miles south of Rich Hill.....	60-66	13500	8.36
5	No. 14, Central Coal and Coke Co.....	"	1½ miles south of previous one.....	42	12824	7.96
6	Rush Coal Co.....	Boone.....	4½ miles north of Columbia.....	44		7.94
7	Keene.....	Boone.....	1 mile east of Deepwater.....		12780	7.94
8	Thompson.....	Henry.....	Switzer.....	32-42	12757	7.92
9	Cooper Creek Coal Co.....	Henry.....	3½ miles southeast of Deepwater.....	12-18	12626	7.76
10	Kingston.....	Henry.....	1 mile north of Kingston.....	12-18	12592	7.66
11	Caldwell Coal Co.....	Caldwell.....	1 mile north of Hamblin.....	18-20	12302	7.63
12	Bowen Bros.....	"	1½ miles southeast of Deepwater.....	30	12063	7.62
13	Watkins.....	Henry.....	1 mile northeast of Louis Station.....	30	12060	7.51
14	Excelsior.....	"	1½ miles southeast of Clinton.....	24	12010	7.46
15	Vernon Coal Co.....	Lafayette.....	3½ miles west of Higginsville.....	16	11978	7.44
16	Marcelline Coal Co.....	Bates.....	2½ miles southeast of Rich Hill.....	36-60	11899	7.41
17	Murlin Coal Co.....	Linn.....	3½ miles south of Marcelline.....	28	11854	7.37
18	No. 15, Rich Hill Coal Co.....	Adair.....	4½ miles north of Stahl.....	48	11834	7.35
19	Edmonds.....	Bates.....	2 miles south of Waterloo.....	18	11824	7.34
20	No. 6, Farmers Consolidated.....	Lafayette.....	1 mile east of Waterloo.....	16	11824	7.34
21	No. 66, Kansas & Texas Coal Co.....	Macon.....	1 mile west of Higginsville.....	56	11769	7.31
22	Silver Creek Coal Co.....	Lafayette.....	3 miles south of Beaver.....	48	11764	7.30
23	Elliot Coal Co.....	Randolph.....	1 mile west of Waverly Station.....	48	11676	7.24
24	Buckhorn Coal Co.....	Lafayette.....	Elliot Station.....	48	11643	7.23
25	No. 10, Morris Coal Co.....	Randolph.....	1 mile west of Huntsville.....	48	11642	7.23
26	No. 70, Kansas & Texas Coal Co.....	Randolph.....	4½ miles southwest of Excello.....	64	11636	7.22
27	Murlin Coal Co.....	Macon.....	Fleming Station.....	22	11583	7.19
28	Salt Fork Coal Co.....	Ray.....	4 miles east of Oorder.....	22	11560	7.19
29	Jones & Davis.....	Lafayette.....	3 miles west of Moberly.....	48	11574	7.19
30	Brush Creek Coal Co.....	Randolph.....	3 miles southeast of Kansas City.....	24	11524	7.16
31	Lower Vein.....	Jackson.....	¼ mile west of Higbee.....	44-48	11523	7.15
32	No. 1, Higbee.....	Lafayette.....	1¼ mile west of Wellington.....	18	11492	7.14
33	Labor Exchange.....	"	3½ miles west of Lexington.....	22	11365	7.06
	No. 1, J. C. McGrew.....	"				

I.—TABLE SHOWING CALORIFIC VALUE OF MISSOURI COALS—Continued.

Rank.....	Name of mine.	County.	Location.	Thickness of vein in inches.....	Heat units per pound of coal.....	Pounds of water evaporated from and at 212° F. per lb. of coal. Boiler efficiency 60 per cent.....
34	Emporia.....	Putnam.....	1½ mile north of Unionville.....	36	11390	7.07
35	No. 61, Kansas & Texas Coal Co.....	Macon.....	2 miles southwest of Bevier.....	51	11372	7.06
36	Richmond & Camden Coal Co.....	Ray.....	1 mile west of Camden.....	50	11331	7.04
37	No. 11, Richmond & Camden Coal Co.....	Ray.....	1 mile west of Camden.....	24	11322	7.03
38	No. 8, Mendota Coal Co.....	Putnam.....	¾ mile south of Mendota Station.....	36	11274	7.00
39	Missouri City Coal Co.....	Clay.....	7 Missouri City.....	22	11274	7.00
40	No. 14, Richmond & Camden Coal Co.....	Ray.....	¾ mile south of Richmond.....	24	11250	6.99
41	Order Coal Co.....	Ray.....	¾ mile south of Richmond.....	22	11233	6.98
42	Glen Oak, Lexington Coal Co.....	Lafayette.....	4 miles northeast of Lexington.....	24	11230	6.97
43	Valley mine, Lexington Coal Co.....	"	1½ mile northeast of Lexington.....	22	11209	6.96
44	Northwestern Coal Co.....	Macon.....	1 mile south of Bevier.....	42-48	11191	6.95
45	No. 2, Higbee.....	Lafayette.....	2 miles east of Higbee.....	42	11147	6.92
46	Dover Coal Co.....	Adair.....	1 mile east of Dover Station.....	18	11018	6.84
47	Rombauer.....	Lafayette.....	¾ mile east of Novinger.....	43	10877	6.77
48	Carter.....	Lafayette.....	1½ mile east of Wellington.....	20	10770	6.69
49	Graddy-Lexington Coal Co.....	Lafayette.....	3 miles west of Wellington.....	20	10759	6.68
50	Grundy Coal Co.....	Grundy.....	¾ mile southeast of Trenton.....	18	10704	6.62
51	J. B. Seltz.....	Lafayette.....	¾ mile west of Waterloo.....	18	10664	6.62
52	No. 2, Mendota Coal Co.....	Putnam.....	2 miles southeast of Mendota Station.....	34	10623	6.60
53	Mayview Coal Co.....	Lafayette.....	Near Mayview Station.....	18	10458	6.50
54	Blackbird.....	Putnam.....	3 miles northeast of Unionville.....	34	10457	6.48
54	Lingo.....	Macon.....	Opposite Lingo Station.....	36-42	10224	6.35

Table II shows the same coals according to their rank as in table I with their proximate analyses these proximate analyses were made according to accepted methods. All coals were analyzed and tested in duplicate. Since some of the coals showed the presence of gypsum, it was deemed best not to subtract the sulphur found from the volatile matter and from the fixed carbon as is usually done.

The last column in table II shows how for the calorific value of a coal is dependent upon the amount of the volatile matter and fixed carbon. A study of this column will show that with few exceptions the sum of these two percentages seems to determine the rank of the coal, the same as the calorific value did in table I.

II.—TABLE OF PROXIMATE ANALYSES OF MISSOURI COALS.

Rank.....	Name of mine.	Water per cent.....	Volatile matter per cent.....	Fixed carbon per cent.....	Ash per cent.	Sulphur per cent.....	Volatile matter plus carbon.....
1	No. 8 Western Coal Co.....	2.35	35.73	53.72	8.20	4.10	89.45
2	No. 3 Weir Coal Co.....	3.62	34.40	53.98	8.00	4.02	88.38
3	Brush Creek Coal Co.....	10.30	40.04	45.35	4.31	2.35	85.39
4	No. 14 Central Coal Co. Upper Vein.....	2.02	40.80	46.39	10.79	6.57	87.19
5	Rush Coal Co.....	4.07	41.05	43.22	11.66	3.88	84.27
6	Keene.....	6.17	40.83	45.04	7.96	3.72	85.87
7	Thompson.....	8.95	34.75	51.28	5.03	1.11	86.03
8	Henry.....	9.62	38.50	45.63	6.25	2.78	84.13
9	Cooper Creek Coal Co.....	7.24	34.60	48.10	10.06	2.64	82.70
10	Kingston.....	10.63	38.58	44.03	6.76	2.54	82.61
11	Caldwell Coal Co.....	9.26	36.69	43.56	10.49	3.61	80.25
12	Bowen Bros.....	6.65	40.27	40.68	12.40	4.67	80.95
13	Watkins.....	8.10	36.13	45.02	10.75	4.72	81.15
14	Excelsior.....	10.25	36.10	44.69	8.96	3.54	80.79
15	Vernon Coal Co.....	6.34	35.89	44.47	13.30	4.81	80.36
16	Marceline Coal Co.....	9.45	33.25	47.27	10.03	5.73	81.52
17	Murlin Coal Co.....	14.78	39.10	42.44	3.68	2.16	81.54
18	No. 15 Rich Hill Coal Co.....	5.88	38.20	44.72	14.20	4.83	79.92
19	Edmonds.....	9.55	35.23	46.42	8.80	3.15	81.65
20	No. 6 Farmers' Consolidated.....	11.95	36.14	44.70	7.21	2.57	80.84
21	No. 66 Kansas & Texas Coal Co.....	12.00	39.10	41.83	7.07	3.44	80.93
22	Silver Creek Coal Co.....	8.34	37.68	41.34	12.64	5.28	79.02
23	Elliott Coal Co.....	11.15	36.32	42.77	9.76	3.55	79.09
24	Buckhorn Coal Co.....	8.58	38.20	42.04	11.18	4.90	80.24
25	No. 10 Morris Coal Co.....	9.90	31.73	47.33	11.04	2.86	78.06
26	No. 70 Kansas & Texas Coal Co.....	10.20	36.26	43.16	10.38	4.47	79.42
27	Murlin Coal Co.....	13.07	37.85	41.66	7.42	1.92	79.51
28	Salt Fork Coal Co.....	11.88	35.76	43.64	8.72	3.76	79.40
29	Jones & Davis.....	11.05	36.87	41.65	10.43	6.56	78.52
30	Brush Creek Coal Co., Lower Vein.....	7.85	33.18	44.17	14.80	5.05	77.35
31	No. 1 Higbee.....	10.00	29.99	50.77	9.24	3.57	80.76
32	Labor Exchange.....	12.31	35.91	43.58	8.20	1.71	79.49
33	No. 1 J C. McGrew.....	15.02	34.20	43.20	7.58	2.97	77.40
34	Emporia.....	17.48	36.01	42.40	4.11	2.38	78.41
35	No. 61 Kansas & Texas Coal Co.....	12.12	37.43	41.90	9.15	3.74	78.73
36	Richmond & Camden Coal Co.....	9.83	37.93	42.99	9.25	3.11	80.92
37	No. 11 Richmond & Camden Coal Co.....	11.97	36.36	41.65	10.02	4.26	78.01
38	No. 8 Mendota Coal Co.....	17.29	37.19	41.43	4.09	2.66	78.62
39	No. City Coal Co.....	12.45	34.48	42.44	10.63	2.95	76.92
40	No. 14 Richmond & Camden Coal Co.....	10.20	36.75	41.20	11.85	5.87	77.95
41	Corder Coal Co.....	9.90	35.08	43.05	11.97	4.78	78.13
42	Glen Oak, Lexington Coal Co.....	14.39	35.00	44.58	6.03	2.01	79.58
43	Valley Mine, Lexington Coal Co.....	13.75	35.30	42.40	8.55	2.22	77.70
44	Northwestern Coal Co.....	11.00	31.77	45.74	11.49	4.28	77.51
45	No. 2 Higbee.....	10.84	28.28	49.30	11.58	5.68	77.58
46	Dover Coal Co.....	12.33	34.53	42.05	11.09	4.56	76.58
47	Rombauer.....	12.12	30.10	44.20	13.58	3.52	74.30
48	Carter.....	11.56	32.93	42.10	13.41	3.50	75.03
49	Graddy, Lexington Coal Co.....	12.33	31.65	42.64	13.48	3.94	74.19
50	Grundy Coal Co.....	10.07	31.62	43.90	14.41	5.43	75.52
51	J. B. Seitz.....	10.13	32.23	41.74	15.90	7.56	73.97
52	No. 2 Mendota Coal Co.....	17.59	34.11	39.85	8.45	3.21	73.96
53	Mayview Coal Co.....	10.50	32.43	40.63	16.44	3.48	73.06
54	Blackbird.....	13.46	34.88	38.36	13.30	4.29	73.24
	Lingo.....	10.16	29.78	41.26	18.80	7.33	71.04

ACCIDENTS IN COAL MINES.

No other feature connected with the duties of the mine inspector proves so unpleasant as that of chronicling the list of names, together with the information leading to the cause and nature of the accident which has resulted either in the death or crippling for life some poor unfortunate miner. He who peruses the names of those who have fallen victims in the performance of their work and duties, and who have passed to the great beyond, will observe the names of many who were warm personal friends of the inspector, men with whom he has worked side by side in the mines for many years, and intimately associated with in and out of the mines—then when it must be that we are compelled to describe the harrowing details of a mine accident, sickening as they are often times, even when the victim is unknown—it is doubly severe when the unfortunate parties have been life-long friends.

Six of those who fell victims during the year were practical miners, having worked in the mines for 40 years and upwards. They were considered as men of good judgment and very careful, but a long experience and freedom from accident for so long a time, caused them at last to accept chances that cost them their lives and in several instances we might say at the very limit of their natural lives. The mines in the very nature of their surroundings will produce their annual crop of accidents, and as in some of the best regulated and managed mines, accidents do occur, just so with the most experienced miners, they too are gathered in along with the less experienced.

With a close observance of our mining laws as they now are on the part of mine operators and managers, and with practical, intelligent, energetic, careful and attentive underground foremen, we may reasonably expect a decrease in the number of mine accidents. But the casualties in the mines will never be brought down to the minimum, until our operators and mine managers realize the mistake of employing inexperienced and incompetent men to work in the mines. To put a man at work in a room who is totally unfamiliar with the nature and character of the roof in a coal mine, and who does not know when is the proper time to set a prop to make it secure, nor where or how to set a prop, is comparatively like leading cattle to a slaughter house, and such acts on the part of mine officials is nothing less than criminal in our estimation.

The wisdom of good laws for the prevention of accidents such as we now have on our statute books has been demonstrated in late years

by the gradual diminution of fatalities in our mines; but the pernicious action of some of our mine officials during the year of employing inexperienced, incompetent and ignorant men to work in the mines offsets all the benefits derived from our mining laws and increases the number of accidents. During the period covered by this report the coal industry of our State was in a flourishing condition, with the demand for coal good and practical miners rather scarce. During such times mine officials were tempted to employ anyone that would call on them for employment, regardless of his qualification as a miner, and a large number of inexperienced, incompetent and ignorant men entered the mines during that time. This greatly swelled the list of mine accidents, a number of whom are now in their graves, and others maimed and crippled for life as the penalty paid for their unwise undertaking. Accidents in mines is one of the principle sources of anxiety to the mine inspector (especially fatal ones), and to prevent them as much as possible is the most important part of his official duty.

Whenever this office is notified that a fatal accident had occurred at any of the mines, I visit the scene of accident as soon as possible to make a careful investigation as to cause of same, attend the inquest when possible and examine witnesses with a view to reaching the exact cause of accident, and the particulars and details obtained of every accident will be found in an article written on Accidents by Counties in this report.

During the period covered by this report, or in other words from the 30th of June, 1900, to December 31st, 1901, there were a total of 49 accidents in our mines, of which 27 were fatal and 22 non-fatal; 12 of the fatal accidents and 6 of the non-fatal occurred between the 30th of June and December 31st in the year 1900, and 15 fatal accidents and 16 non-fatal occurred during the calendar year 1901. Of the 48 accidents occurring during the 18 months already mentioned Adair county is credited with 4 fatal and 4 non-fatal, followed by Barton with one fatal and one non-fatal, Bates one fatal and two non-fatal, Lafayette with one fatal, while Macon county is charged with 11 fatal and 12 non-fatal accidents, Randolph county is charged with two fatal and three non-fatal accidents, Ray with two fatal and Vernon county with a small output of coal is charged with 5 fatal accidents.

The above accidents were due to the following causes: From falling roof, 19 fatal and 7 non-fatal; from mine cars, 2 fatal and 6 non-fatal; from fall of coal, 1 fatal; from windy shot, 2 fatal; gas, 1 non-fatal; from premature blasts, 2 fatal and 4 non-fatal; from careless handling of powder, 4 non-fatal; from cage, one fatal. Out of the whole number of those injured in these accidents, 40 represented themselves as miners, 6 as

number of the victims at peace in death, while around the camp you will readily be observed that falls of roof continue in this State as in all other mining states of the Union to be the most disastrous feature in the mining of coal.

It is noticeable also that more accidents happen in mines where the room and pillar system of mining is practiced than where the longway plan is used and more especially where the coal is blasted off the solid, as so many of those self-constituted miners are wholly unfamiliar with the use of powder, both in the matter of required amount for a charge or the preparation of a shot, and they recklessly charge a hole with double the amount of powder required and the shot when exploded hurls the coal in all directions, knocking out the props and shattering the roof to such an extent, that it takes the skill and ability of the most experienced miner to keep the place safe and secured with timber. The pernicious system of blasting the coal off of the solid, which was introduced in the mines of late years, has proved itself to be the most disastrous practice to the life and limb of the miner of anything yet introduced in the mines, and a trip to a mining town or camp where the method is practiced will convince the most skeptical. In the grave yard you will find a large number of the victims at peace in death, while around the camp you will find a large number of the cripples with broken limbs and backs who have to worry through life dependent upon relatives and others for charity.

That dangerous system has also filled our mines with a very low grade of miners, a large number of whom do not know the first principle of coal mining and it would be more appropriate to call them coal butchers than coal miners, as they not only place their own lives in jeopardy but endanger the life of others. All who are interested and will take pains in reading this article on accidents, may, by examining the respective causes of each accident as embodied in this report, be convinced that a large majority of those occurring last year are due to carelessness.

The mines of this State are as well provided for in all things necessary to prevent accidents as will be found in any mining state in the country. Our operators generally furnish everything that is needed for the mine to keep it in good condition. Miners are provided with plenty of props, which are delivered to them in their working place and in sufficient number when called for, to enable them to protect themselves, and I believe that mine accidents can be greatly reduced if the miners themselves would exercise more care and better judgment. I would also recommend that mine foremen be more vigilant in their official duties and visit the working places of those under their care oftener. I think it is the duty of every mine foreman to visit each working place every day and

look carefully after the safety of every employe. The following letter written by Mr. W. E. Murlin, president of the Murlin Coal Co., to all his mine foremen and agents is self-explanatory and very commendable. It fully expresses my sentiments, and meets with my approval, and hope all other mine officials will emulate him :

Murlin Coal Co., Bevier, Mo., Nov. 8, 1901.

To all Foremen and Agents :

Your attention is again invited to the necessity of constantly looking after the welfare and safety of employes in and around mines. Roadmen and trackmen should daily inspect all entries and traveling-ways, and see that same are in a safe condition. Rooms and working places must be examined frequently to see that miners are using proper care in keeping their working place in a safe condition.

Ropes, cages and hoisting apparatus must be examined daily by engineers and yourself, to see that same is in perfectly safe condition and repair for handling of men on cages.

No risks involving safety of life and limb of employes must be assumed.

Full and complete compliance of this order is imperative. Yours truly,

W. E. MURLIN,
President.

Carbon J. P. Davis,
J. P. Sneed,
Harry Wyatt,
H. L. McPherson,
W. A. Atteberry,
H. H. Wayland.

While Mr. Murlin is only addressing and instructing those in his employ, the inspector will take advantage of his commendable and timely instructions and with his permission, go further and invite every mine official in the State to read the above instructions carefully, and then comply fully with every word therein, because it is applicable to any and every man in the State under whose care the safety of men in our mines depend. The Murlin Coal Co. shows a good record against accidents since its been in business, and the vigilance displayed by the underground management accounts for its record.

FATAL ACCIDENTS BY COUNTIES.

ADAIR COUNTY.

Thos. Mitchell, a miner employed by the American Fuel Company at Stahl, was instantly killed by a fall of rock on the 3rd day of August, 1900. Deceased and another man were working in an entry which had just been turned off and deceased was in the act of loading a car when the rock fell between the car and the face of the entry and caught him under it, crushing his life out at once. He was 19 years old and single. An inquest was held and the jury returned a verdict that the deceased came to his death by an accident caused by a fall of rock, said fall caused by an oversight of the deceased in not propping the place, thinking it was safe at the time.

William Little, a miner, employed by C. B. Havens & Co., at mine No. 1, near Danforth, was killed on the 27th of August, 1900, by a fall from the roof. Deceased was a boy about 15 years of age and was working with his father when the accident happened. Shortly after the accident I visited the mine and made an investigation and discovered that a slip was running at an angle across the room, but the roof was strong and could easily have been made secure by promptly setting two props. Sad as it is to reflect upon, no one knew better or realized the situation better than the father of this boy, who, as is too often the case, delayed too long. The rock fell on the boy, crushing the life out of him at that tender age when he and all other of his age should be in school. We understood that the coroner of Adair county held an inquest over the body, but we failed to obtain a copy of verdict of the jury.

Lowery Robb, a miner, working for the Rombauer Coal Co., at mine No. 1, near Novinger, was killed by a premature shot on the 9th of January, 1901. Deceased was working in a room with his father, and prepared a shot in the forenoon which was to be lighted with fuse at the noon hour. From all the information we could gather of the accident (which we considered very strange) goes to show that the man working in the room on the inside also had a shot ready to fire at the same time, and as it was known to Robb that the shot in the next room was in the pillar, he went out on the entry until that shot went off, when he went back to his room to light the fuse, but before he reached the face the shot went off and killed him instantly. On investigation it was discovered that the shot on the inside room had blown through the pillar and the fire from the powder ignited the fuse. The boy was but 17 years of age. He had

worked several years in the mines. The verdict brought by jury after an inquest being held was accidental death.

Evan Jones, a miner, employed by the Rombauer Coal Co., was fatally injured at mine No. 1, near Novinger, by a fall from the roof on the 17th of June, 1901, and died at noon on the 19th. Deceased had a standing shot which stood over Sunday, and on Monday morning he went to his room and started to work it off, when a piece of slate fell, caught him under it and crushed his pelvis, or lower part of the abdomen, injuring him so badly that he died from his injuries two days later. He was about 54 years of age and single. Mr. Jones was a practical miner, having worked the greater portion of his life in the mines. He was well known to the writer and we considered him a very careful man. No inquest held.

BATES COUNTY.

Louis Mutrix, a miner employed by the Rich Hill Coal Co., at mine No. 15, was instantly killed on the 10th of September, 1900, by a fall of slate at the face of his room. Deceased was working alone and under-mining off a standing shot, when a piece of slate fell and caught him. He was found by the driver an hour or so afterward under the slate and cold in death. He was 35 years old and single. The coroner's jury rendered a verdict of an accidental death by falling of slate at the face of his room.

BARTON COUNTY.

Chas. Karlson, a miner, employed by the Wear Coal & Coke Co., at mine No. 10, near Minden Mines, was instantly killed on the 25th of July, 1901, by a premature blast. Karlson was working in an air-course and at noon he fired two shots, one of which went off immediately and after waiting 30 seconds for the other to fire he went back on the shot, thinking that it failed to light, and when up to the shot it exploded, hurled the coal around, killing him instantly. Deceased was 30 years of age and single. No inquest held.

LAFAYETTE COUNTY.

Peter Buethens, a miner, employed by the Lexington Coal Co., at the Glen Oak mine, near Lexington, was instantly killed on the 24th of October, 1900, by being caught between cage and shaft curling. At 5 p. m. on above date the men crowded on the cage, overloading it, 9 being on when only 8 were allowed to ride, and the cager, whose duty in was to see that only 8 got on the cage and who also attended to the signals, ordered one off, but failing in his efforts to get one off he started to put a car of coal on, thus denying them the opportunity of going up then, and

at this moment they began stepping off, when the cage was started up on signal given to the engineer by the regular topman, who insists that he received a signal from below, but the bulk of evidence received at the coroner's inquest is against him. The deceased (Mr. Buethens) was in the act of stepping off when the cage started and was caught between the cage and bottom of curbing, breaking his neck and killing him on the instant. Deceased was 63 years old, a widower, and had 5 grown and married daughters.

Verdict of the jury was in accordance with the above.

MACON COUNTY.

Charles A. Sparkman, employed by the Kansas & Texas Coal Co., at mine No. 70, near Ardmore, was instantly killed by a fall of rock on the 11th of September, 1900. On my examination of the place shortly after the accident, was informed that deceased was on his knees filing and sharpening the bit of his drill, when a bell rock weighing fully two tons fell and crushed the life out of him in an instant. The rock fell between the end of the track and his working face. On inquiry I was informed that deceased was not a miner, and had only worked a few weeks in the mine. At the time of this accident and for some months previous to that the miners of this company were on a strike, and Sparkman was employed by the company for several months to go around and employ men for the company to take the place of the striking miners, and when the company secured enough of men to operate their mines, and his services no longer needed in that capacity, they employed him as a miner, when he was not one; hence the result was losing his life. Deceased was a citizen of Randolph, and had lived many years in that county. He was 30 years of age, married, and had 4 children. No inquest held.

William Frost, a driver, employed by the Kansas and Texas Coal Co., at mine No. 61, near Keota, was killed by a piece of slate on the 22nd of January, 1901. Deceased was going in with a trip of empties when a piece of slate fell from the side of the entry as it passed the corner of an old cross entry, striking him on the head and sides, causing immediate death. The entry at that place was high and the sides had fallen straight, and some of the coal came off at the same time as the slate that fell. Deceased was 21 years of age, and single. Coroner viewed body, took some evidence, but held no inquest.

John Red (colored), a miner, employed by the Kansas & Texas Coal Co., at mine No. 61, near Keota, was killed by a fall of roof April 2nd, 1901. Deceased was working alone, and was found dead under a large piece of the roof near his working face, and to all appearance had

been dead for some time, as the body was cold. He was 35 years of age, married and had two children.

Coroner viewed the body, took testimony without jury, and considered the evidence so plain that he considered a jury unnecessary, and he found that the accident was caused by the deceased not properly propping his room, when he had plenty of props in the place to do it.

Wm. H. Haley, a miner, employed by the Kansas & Texas Coal Co., at mine No. 66, near Keota, was instantly killed by a fall of the roof on the 29th of April, 1901. I visited the mine a few days after the accident, and on investigation learned that deceased was loading a car of coal under this piece of roof which was known to be dangerous; his own Buttie had warned him of the danger and advised him to secure himself by setting props under it, but to no purpose. The piece that fell on the injured man was about a foot thick and the setting of two props on the roadside would have made the place perfectly safe, but he did not heed advice and suffered death thereby. This accident happened early on Monday morning, and we reached the mine a few days later, and while making an investigation was informed that deceased and his wife, in company with some neighbors, visited the mine the Sunday before the accident occurred, and while the party were in the mine they visited Haley's room, and his own wife, who was never inside of a mine before, noticed the dangerous condition of the roof and cautioned her husband to prop it Monday morning before he went under, and still he paid no attention to the warning. The injured man was not a practical miner and only worked a few months in the mines, being employed by this company, like nearly all of their employees, during the strike. He was 30 years of age, married, and had two children. Coroner after viewing the body and hearing some evidence considered a jury unnecessary, and pronounced it accidental, caused by not propping up the room.

Antonio Oberto, a miner, employed by the Kansas and Texas Coal Co., at mine No. 61, near Keota, was fatally injured by a fall of coal on the 17th of July, 1901. Deceased was working under some top coal at the face of his room, when it fell and caught him, injuring him so badly that he died six hours later. The injured man was 43 years of age, married and had three children. The coroner after viewing the body, took testimony of several witnesses and considered jury unnecessary and rendered his verdict—"that deceased came to his death accidentally by neglecting to secure his top coal.

Geo. Stewart (colored), a miner, employed by the Kansas & Texas Coal Company, at mine No. 61, near Keota, was fatally injured by a fall of rock on the 15th of October, 1901. Deceased was at work drawing back-pillars alone, and while mining off a shot he was caught by a piece

of slate falling on him and was held under it until the driver came after his car and released him. He was so severely injured that he died in a few hours after taking him home. Visiting the mine a few days later I was informed that the driver had warned him of the dangerous character of the roof, but not being a practical miner, paid no heed to the warning and paid the penalty of his ignorance with his life. Deceased was 28 years of age and married, but had no children. Coroner's verdict: Accidental, caused by his own neglect.

Sebastian Targetta, a miner, employed by the Kansas & Texas Coal Co., at mine No. 61, near Keota, was seriously injured by a fall of the roof on the 31st of October, 1901, from the effects of which he died some time later. The injured man was working off some coal at the face of his room when some slate fell off the roof on his back. The doctors pronounced his back broken. After being taken home he suffered a great deal, and while we didn't think he could possibly get well, we failed to learn how long he lived after the accident. He was about 30 years of age and single.

Ura Kirtley, a driver, employed by the Kansas and Texas Coal Co., at mine No. 70, near Ardmore, was fatally injured November 14, 1901, by a car of coal. From information obtained after a thorough investigation of the cause of the accident we found that Kirtley was riding on the tail chain coming out with a trip of coal, and from some unknown cause fell under the front car and when found the car was off the track and the two front wheels had passed over him. His pit cap and lamp were found about 10 feet from where the car stopped, indicating that he fell where they were found and was dragged the balance of the distance and until the wheels climbed his body and threw the car off, causing the mule to stop. We learned that the mule was an old-timer well-broken pit mule, and the track where the accident occurred was newly laid with heavy iron and was in first class condition. The theory of those most familiar with the circumstances is, that Kirtley was riding on the tail chain, and as the car started to go down grade the mule quit pulling, causing the chain to slack and he slipped off, thus losing his balance and went under the car. Deceased was 35 years of age, married and had one child. He lived about 24 hours after the accident. No inquest held.

Peter Daniels, a miner, employed by the Northwestern Coal Co., at mine No. 4, Bevier, was killed by a fall of rock on the 14th of August, 1900. Mr. Daniels and son were working together and were engaged in drawing entry pillars on one entry, and the Griffiths brothers were engaged in same kind of work on the other entry, and both parties working on the same pillar or stump and from 15 to 20 feet apart. The evidence

taken at the coroner's inquest showed that the coal behind them had been taken out and that they were moving or coming with the work towards the shaft bottom. On the day of the accident and about 3 o'clock in the afternoon the deceased was on his knees undermining when all of a sudden and without giving a partial of sign or warning a large pile of rock and slate fell on him, crushing his body in a fearful manner, breaking his legs and arms, killing him instantly. His son was loading a car of coal when the rock fell on his father about 10 or 15 feet away. The rock fell across the pillar and within a few feet of the Griffiths brothers, who had a very narrow escape from death themselves, and as soon as they realized the situation they ran at once to the assistance of Mr. Daniels, but when the two Griffiths boys reached the place and saw the situation they were practically helpless without getting more help, as there was so much opening behind them where the pillars had been taken out that the roof fell so high that it took all the men in the mine about two hours to get the deceased from under the fall.

Mr. Daniels was one of the most practical miners in the State; had worked in the mines for 45 years, 16 years of which he worked at this mine where he finally met his death. He had been hurt twice in the mines before and was so crippled in his limbs that he could not stand on his feet to work and had to work on his knees all the time. He was a good man and lived up to his profession, had given his heart to God in his infancy, had kept the faith through all the turmoil, tribulation, temptation and trials of even the life of a coal miner. Mr. Daniels clung to the cross and died as he lived a devoted Christian, he was loved and respected by all that know him, and by none more so than the writer, who knew him for many years and respected him greatly for his high standing as a citizen and a Christian. Deceased was 57 years of age. Married, and had one son.

The jury, after hearing all the evidence concerning the accident, rendered the following verdict: We, the jury, being duly sworn, find from the evidence that Peter Daniels came to his death at or about the hour of 3:00 p. m., Tuesday, August 14, 1900, in the Northwestern Coal Company's mine No. 4. We further find that his death was an unavoidable accident, due to the carelessness or negligence of no one.

(Signed)

ARTHUR C. JONES,
D. F. BURRIS,
ARTHUR ROBERTS,
G. W. SHONK,
A. E. FARRELL,
ED. ANDERSON,
G. E. SCRUTCHFIELD, Coroner.

William Feidler, a miner, employed by the Northwestern Coal Co., at mine No. 8, near Bevier, was killed by a fall of rock on the 16th of August, 1900. Deceased and his son were working together in a room, and while Mr. Feidler was engaged in loading a car of coal a large rock fell and caught him between the car and rock, killing him instantly. I visited the mine shortly after the accident and on investigation found that the room was well propped and everything about it was done in good workmanlike manner. The room had not been disturbed since the accident aside from taking out the body. I noticed the rock that fell had thin edges all around and thick in the center, and being over the wheel-road, could not be secured by props, and it was too low to set cross bars, leaving no safe remedy but to take it down. We also noticed that the rock when it fell discharged two props on the roadside. The car that deceased was loading at the time was standing at the end of the track about 6 feet from the face and was about half loaded, and the rock was laying crossways over the car. The rock was about 9 feet long, 5 feet wide and a foot thick in the center and tapering down along the edges.

The testimony taken at the inquest proved that there was plenty of props in the room and that the son of the injured man had told his father not to load coal under the rock, as it was loose, but the unfortunate man did not heed the warning of his son. The deceased was a practical miner, having worked in mines for 45 years or more, had worked in the mines of Bevier since the year 1884. He was a sober, industrious, a worthy man, esteemed and respected by all who knew him. He was 58 years of age, married and had 7 children, 3 sons and 4 daughters, 5 of whom are grown up and married, the other two are nearly grown and are at home. A large number of witnesses were examined at the inquest, and the jury returned the following verdict:

We, the jury, being duly sworn, find from the evidence that William Feidler came to his death at about the hour 9:00 a. m. on Thursday, August 16th, 1900, at mine No. 8 of the Northwestern Coal & Mining Company.

We further state that his death was due to the falling of an overhead rock, it being a case of accident due to his own carelessness.

We, the jury, have personally examined the place of accident, and all concur in the above statement.

(Signed)

J. W. OVERBY,
HENRY RUECKER,
J. W. BURGIN,
JOHN WACHTER,
ROBERT N. JONES,
ROBERT RUECKER,
G. E. SCRUTCHFIELD, Coroner.

Peter Dorr, a driver, employed by the Northwestern Coal Co., at mine No. 8, near Bevier, was killed by a fall of rock and timber on the 14th of October, 1901. Deceased took in a trip of two empty cars about 9 o'clock the morning of the accident, and not returning promptly with his trip, the boss driver followed him in to ascertain what was the cause of delay and found him dead in front of the first car, with an entry cross-bar and other timber with a fall of rock on top of the timber laying across his neck. He was driving in the first east entry on the north side, and distant about 1,000 feet on the main north going in with his trip, and as he passed an abandoned room, with the switch still down, the wheels of the front car struck the points of the switch, which caused the car to jump the track knocking out a leg (or a post) of the room frame, which in turn let down the cross-bar, laggins and rock, all of which fell on the driver, killing him on the spot. I visited the mine shortly after the accident and on examination discovered that the driver must have been going at a reckless gait to knock and force out the timber as he did. Deceased was 18 years of age and single. Coroner's verdict was not returned at the time the company reported accident to this office.

RANDOLPH COUNTY.

Thos. Bain, foreman, employed by the Higbee Coal Co., near Higbee, was killed by a fall of slate on the 29th of October, 1900.

The mine was newly sunk, and only three men were at work at the bottom taking off coal to make a double parting. The entries were only about 10 feet from shaft timber when accident occurred, the cages were not even put in at that date. The bottom had been standing idle over Saturday and Sunday on account of rain, and at 7 o'clock Monday morning 3 men went down, but before they commenced work they sounded the roof and found it dangerous, and called on Mr. Bain to come down to advise them as to the best way to make it safe and secure. Mr. Bain at once went down in the bucket, got off at the bottom, took hold of a pick to sound the roof, and found it loose, he called for the measuring stick and as one of the men handed him the stick they heard a crack and called on him to jump off which he tried to do, but too late; the slate came down, caught him and crushed out his life in an instant. It was not over 5 minutes from the time he stepped out of the bucket until he was a corpse. I was informed on investigation that the 3 men at the bottom told him as he stepped off the bucket that the roof was loose and for him not to go under it. Deceased was one of the most practical miners in the country, he had spent 60 years of his life in the mines in various positions, and was versed in mines and mining in every detail, and occupied a high standing

among miners and operators. He was an industrious and worthy man, esteemed, loved and respected by all who know him, and by no one more than by the writer, as he was one of my best friends, having associated together for a great number of years and it pains me to have to chronicle these few remarks of his untimely and sudden death, but his memory will always be pleasant to me. He was 68 years of age, married, and had 5 grown children.

The coroner examined some witnesses and after he heard their testimony, did not consider it necessary to hold an inquest and pronounced it accidental.

Miller Williams (colored), a miner, employed by the Murlin Coal Company, at mine No. 5, Kimberly, was fatally injured on the 20th of September, 1901, by a fall of rock. Deceased was shoveling coal at the face of his room, when a large rock fell on him. The accident happened about half past nine o'clock in the morning and he died at 6 p. m. same day. I examined the room a few days after the accident and found the rock there as it fell, it was about 8 feet long, 3 feet wide and about a foot thick and could have been secured by properly proping, but on examination I discovered that the working of the room had been carelessly and recklessly performed, there were but very few props set, and those that were set was put up in bad shape. Deceased was married, but we failed to learn his age or if he had any children. No inquest held.

RAY COUNTY.

John Zucklin, a miner, employed by the Richmond and Camden Coal Company at mine No. 4, near Richmond, was fatally injured on the 18th of October, 1900. Deceased had finished his day's work and started to go out to the shaft bottom, and when he came to the road head he discovered that the mule was there with his trip of full cars coupled and ready to start for the bottom of the shaft. Zucklin climbed on top of one of the cars to ride out instead of walking, which habit was customary with the miners, as the entry was long, low and wet in places, and while riding out thus he noticed a chunk of coal on the car in front of him about to fall off and he reached forward to adjust it and before he could recover his position on the car on which he was sitting, his head came in contact with a low place in the rock roof, forcing his body back on the loaded car, causing such an injury of the spinal cord that he died about 4 o'clock the next morning. Deceased was a practical miner, having worked in the mines of Ray county since the year 1888. He was sober, honest, industrious, good citizen and esteemed by all that knew him, he had made a great many plans for the future, had purchased a nice home and was

striving hard to pay for it, when death took him away from his beloved wife, his seven dear children and his aged mother, who was making her home with this gentle, kind and affectionate son, who was taken away so suddenly. Deceased was about 38 years of age, married, and had 7 children, 5 girls and two boys, the oldest but 13 years old and the youngest less than one.

William Swope, a miner, was instantly killed by a fall of rock at a mine operated by Charles Ottman, and the deceased, on the 10th of November, 1900, near Richmond. Deceased entered the mine as usual morning and while undermining, a large pile of rock fell and caught him, breaking his limbs and mashing his body in such a manner that death resulted before he could be rescued, as no one was in the mine at the time, it being a local mine and only employed two or three men. Deceased was about 40 years old and single.

VERNON COUNTY.

Paul Martin, a miner, employed by the Central Coal and Coke Co., at mine No. 14, near Panama, was killed by a fall of slate on the 13th of August, 1900. Deceased was engaged in drawing pillars and was working alone. On the day of the accident he was at his working face in the act of drilling a hole when a piece of slate weighing about 3 tons fell and caught him, crushing out his life in an instant.

The accident was not known to any one until he was missed from the dinner circle by his fellow miners, when a search was instituted, which resulted in finding the body mutilated and cold in death. No one knows how long he had been dead as nobody heard or knew anything about the fall. Deceased was a practical miner, had been working around the mines of Rich Hill for about 14 years, was sober, industrious, of good moral character and a good citizen. He was 55 years of age, married, and had 3 grown children. The coroner's verdict was—unavoidable accident.

Abe Brown (colored), a miner, employed by the Central Coal and Coke Co., at mine No. 14, near Panama, was killed by a fall of slate on the 20th of December, 1900. Deceased was loading a car of coal in his room when a piece of slate weighing about a ton fell on him while he was bending over building coal on his car, crushed him and killed him at once. Deceased was 35 years of age, married, and left 5 children.

Thos. Latcham, employed by the Central Coal and Coke Co. as shot firer, at mine No. 14, was killed at said mine on the 21st of January, 1901, by an explosion. Full particulars of this will be found on next page under the head of explosion. Latcham was 32 years of age, married, and left 4 children. The coroner brought in the verdict that deceased "came to his death by asphyxiation."

R. D. Williams, also a shot firer, employed by the same company and at the same mine as Latcham, was killed in the same explosion. A detailed account and a full description of the explosion is given in an article written on the explosion and published in this report. Deceased was 29 years of age and single.

Lawson Glenn, a miner, working for the Arthur Coal Mining Company, near Panama, was killed on the night of the 11th of July, 1901, by a fall of slate. Deceased was working in an entry on the night shift and was on his knees making a cutting when about 4 tons of slate fell from the roof on his head and killed him instantly. The slate that fell was about 8 feet long, from 4 to 5 feet wide, 2 foot thick at the thickest place and tapering down to a feather edge. The accident was caused by a slip running along the side, giving the slate a loose end, and being over the wheel road could not be secured except by cross-bars. The other man that worked with him escaped unhurt. Deceased was 25 years of age, married, but had no children.

EXPLOSION AT MINE NO. 14.

On the 21st day of January, 1901, at 7 p. m., an explosion occurred at mine No. 14, owned and operated by the Central Coal and Coke Company, a company that operates a large number of mines in Missouri, Kansas, Arkansas and Indian Territory, with general office at Kansas City. At 4 o'clock on the day of the accident after the miners had finished their day's work and retired from the mine, Thos. Latcham and Rees Williams, the two shot firers, repaired to the bottom of the shaft, and immediately entered upon their duties of firing the shots prepared by the miners during the day. The two shot firers were together and commenced firing at the south entry on the last of the air and worked against the current; they had fired all the shots prepared on the south entry and on entry M and had fired all on entry L up to room 9, in which room we came to the conclusion, after a thorough examination, caused the explosion. At about 7 o'clock in the evening a dull explosion was heard by the miners living in close proximity to the mine and they at once recognized that something unusual and serious had occurred below. A large number of miners at once collected at the pit top ready and willing to enter the mine and render any assistance in their power to rescue their fellow miners, and as soon as it was deemed even comparatively safe a rescuing party entered the mine, composed of the most practical and skillful miners, headed by Mr. John Williams, the mine foreman, and a brother to one of the shot firers. The rescuing party had not proceeded very far before they discovered that an explosion had occurred, and found a stopping had

been blown out between the intake and the return, close to the shaft bottom, which they stopped up by a canvass before proceeding further, in order to get the air around. On going further into the mine they discovered a door had been wrecked which destroyed the ventilation at that point and in its place a canvass door was provided in order to assist their further progress into the mine to look for the men; but the rescuing party, all of them practical miners and led by one of the most practical mine men in the State, realized that great precaution had to be exercised in the search, as the ventilation had been destroyed by the wreck of doors and stoppings and the mine was full of powder smoke, sulphur, fumes from the explosion of so many shots, after-damp and dust from the windy shots, the search was made with safety lamps. On proceeding further they came across the body of Williams, on the outside of room No. 1 on entry "L," and Latham at room No. 2, about 75 feet beyond, both men were dead. At the time the accident occurred I was in another part of the State and was notified of the explosion on the morning of the 22nd and reached the scene of the accident on the morning of the 23rd, and proceeded at once to make a thorough and careful investigation as to the cause and of the damage done by the explosion.

Shaft No. 14 is located about a mile south of Panama, and equipped with first class machinery, the ventilation is furnished by a 15-foot ventilating fan, and the ventilative current divided in 3 separate and distinct currents and very practically conducted around every part of the mine. The shaft was sunk about two years previous to the time of the accident, and at the time the explosion occurred, there were about 150 men employed and the mine furnished about 700 tons of coal per day. On entering the mine to make this examination I noticed the same conditions existed therein as that immediately after the explosion occurred, nothing having been done besides taking out the dead bodies of the two shot firers. I was ably assisted in the examination by four of the most practical miners and by Mr. Williams, the mine foreman, and Mr. David Mackie, general manager of all the mines of the Central coal and Coke Co., the latter being one of the most practical mine managers in the country, having spent about 60 years of his life in the mines, and is familiar with mines and mining in all its details from a practical standpoint. On beginning our examination of the mine, we discovered the extent of the explosion was very limited, and outside the wrecking of one door and the blowing out of a few stoppings the mine had suffered no other damage and could be operated the next day with the usual force of men. We made a thorough search for the seat of the trouble, and after the most careful investigation we could not avoid the conclusion, judging from the effects pro-

duced by the shots fired, that the trouble originated in room No. 9 in the entry "L." Here we found that two shots had been fired, one of which had been indifferently prepared and evidently greatly overcharged with powder, as it blew off the heel, leaving fully 4 feet of the hole behind. What we term a blow-out shot; this shot having created and discharged a large amount of carbonic oxide gas, this gas made the conditions ripe for trouble; immediately follows the shot on the other side of the room, and it being greatly overcharged with powder, with the result that when it was exploded, it threw out a great sheet of fire and flame at the same time hurling with great force the liberated coal to the rib on the other side of the room and clear out to the mouth of that room—this proved to be windy shot. There was nothing to prevent the flame from the windy shot coming in contact with the oxide gas born of the blow-out shot, and that the two did come in contact explains the explosion and the cause of that concussion which worked the damage done.

We also discovered that a very careless, illy-prepared and overcharged shot was fired in room No. 8, but we found sufficient proof to justify us, in the conclusion, that the starting point of the explosion originated in room No. 9. The two shot-firers, after firing the shots at the last-mentioned room, appear to have gone together to room No. 2, on entry "L," where Latchman was later found by the rescuing party, and the indications all showed that he had died instantly by the force of the concussion. He was lying on his face with his torchlight and knife by his side.¹ The tracks of Williams showed that he made a hard struggle for his life, as he left Latchman and crawled on his hands and knees towards the shaft bottom, aiming to get to the fresh air, but the ventilation had been so deranged by the wrecking of doors and stoppings that when he met the bad air engendered by the explosion, it so overcome him that he fell in his gallant effort and died about 75 feet from his comrade, and was the first found by the rescuing party laying on his face cold in death. There were no burns or bruises on either one of the men or any marks whatever, and their death was evidently caused by asphyxiation. The two shot-firers were practical miners and had worked in the mines of Rich Hill for a number of years; had worked together as shot-firers at the mines of this company for the last four years before the accident and were considered the most reliable shot-firers in Rich Hill. Both were sober, careful, and always displayed good judgment in the execution of their dangerous duties. Entering the mine at 4 p. m. on this fatal day, with about half of the shots fired at 7 p. m., when the explosion took place, showed that they

exercised great precaution and took plenty of time between shots, and after a careful investigation of every feature connected with the explosion, I exonerate the shot-firers from any blame.

The mine is practically operated and well ventilated, and there is nothing left undone here to procure the greatest safety for the employes. Mr. Williams, the foreman of the mine, is one of the most practical men of the State. He is sober, careful and very attentive. On all of my visits to the mine I find Williams at his post of duty carefully guarding the interest and safety of both the men and the company. He keenly felt the sadness of this accident, his beloved brother being one of the victims. After a careful and painstaking investigation of the mine, and due consideration given all the evidence taken at the inquest concerning the accident, I find nothing calling for censure of the Central Coal & Coke Co., or its officers, for any failure to comply with the mining law or any neglect of duty. In my judgment, the explosion was due solely to the indifferent and illy-prepared shots fired in room No. 9 on entry "L."

After this investigation a consultation was held between the mine officials and the coal mine inspector, with the aim and purpose of devising some means by which greater security would be afforded shot-firers. After an exchange of views, a plan was suggested and at once adopted by Mr. Mackie, who, calling up his foreman, instructed him to at once put another man on the shot-firing force, directing that this extra man should charge and tamp all holes, and in the event of a hole being found that was drilled too far into the fast, not to charge it, and to use his own judgment in charging any hole. In this way shot-firers have a knowledge of the nature and character of all holes drilled before firing them. This will add greatly to the security of the shot-firer and has my very decided approval.

NON-FATAL ACCIDENTS.

ADAIR COUNTY.

February 23, 1901, Oriso Alexandro was seriously injured by the premature explosion of a shot at a mine of the C. B. Haven Coal Co. at Danforth. The injured man, after he lighted the shot, retired, but before he was out of the way it exploded, injuring him very seriously, but will not result in permanent disability.

March 16, 1901, Mansfield Taylor was seriously injured in his room by the explosion of a shot at mine No. 1 of the C. B. Havens & Co. There were two other miners with Taylor in the room at the time, and both were slightly injured, but all will soon get well.

March 21, 1901, George Collville was injured by a fall of coal at mine No. 1 of the American Fuel Co. at Stahl. Collville was using a pick, trailing the soft clay which had been standing, when the coal fell without warning. It knocked him down and the coal breaking his collar bone and otherwise injuring him, and but for some loose coal laying by his side, which took the weight of the fall, the accident undoubtedly would have resulted fatally.

December 16, 1901, Neil Maloney was injured by a fall of slate at mine No. 1 of the C. B. Havens & Co. Maloney had fired a reckless shot at the noon firing, which knocked out several props, and he neglected to reset them before starting to work, when the slate fell, bruising him on the back and cutting his eye. Accident is not serious.

BATES COUNTY.

August 22, 1900, Tony Jetto was injured by gas at mine No. 15 of the Rich Hill Coal and Mining Co. Jetto was drawing pillars on the eighth east entry. At the time of the accident he was drawing the pillar of room No. 37 and broke through into room No. 38, which had long been abandoned and caved in. Jetto struck his head and lamp up to a hole above the fall and ignited some standing gas lodging there, burning his face and hands badly, but not dangerously.

September 29, 1900, John Johnson was injured by an empty car at mine No. 15 of the Rich Hill Coal Co. Johnson was a boy, about 16 years of age, at the time of this accident. He got into an empty car to ride to his work and the train ran away, upsetting the car on him and dragging the car about 150 feet with the boy under it, breaking his arm, collar bone and bruising his body all over.

BARTON COUNTY.

July 1, 1900, Wm. Hostler was injured by a trip of cars at mine No. 3, Wear Coal Co., at Vernon. Hostler had been repairing the track on the east side of the mine, and hearing a driver coming in with his trip, he tried to step out of the way, but made a misstep and fell under the cars, bruising his legs and wrenching his back, which laid him up. At the time he was supposed to be fatally injured, but he got well and went to work.

MACON COUNTY.

July 28, 1900, W. H. Warner was injured by a trip of coal at mine No. 66, operated by the Kansas & Texas Coal Co. at Keota. Warner was employed as a driver, and was coming out with a trip of coal and, forgetting to open a trap door which he had to go through, drove his trip into it and broke his arm.

August 9, 1900, Lysander Waddell was injured by a fall of rock at mine No. 70, operated by the Kansas & Texas Coal Co. near Ardmore. Waddell had fired a shot in turning a room which kicked back on rib, loosening rock over the wheel road in the air course, the rock fell on him while he was preparing to secure it, crushing his ankle and breaking two bones of his leg close to ankle joint, and bruised him considerably on body, side and back.

January 7, 1901, Thos. Downs was injured by a coal car at mine No. 66, operated by the Kansas & Texas Coal Co. Downs was a driver at said mine, and in coming out of a room with a full car of coal in attempting to step on the tail chain, his foot slipped, he fell between the car and rib and bruised his chest and shoulder, but the injury was slight.

February 1, 1901, Vinarilla Silvis was injured by the explosion of powder at mine No. 61, Kansas and Texas Coal Co. Silvis was doing some work at his tool hoe, and in adjusting his light a spark flew off his lamp and into the box, igniting some loose powder in the bottom, and exploded a part of a keg of powder close by, burning him very seriously on the head, arms and shoulders.

February 7, 1901, Fritz Starchirs was injured by a mule at mine No. 66, Kansas & Texas Coal Co. Fritz was a driver, and in coming out with his trip he was riding on the tail chain, when the mule suddenly commenced kicking, cutting him badly about the face and mouth.

March 15, 1901, Walter Graham was injured by a fall of rock at mine No. 61, Kansas & Texas Coal Co. Graham was at work in his room loading a car of coal, and while in the act of shoveling, a piece of rock roof fell on him, breaking his leg and cutting him on the head, arm and side.

April 19, 1901, Marvin Belsher was injured by the explosion of a keg of powder at mine No. 57, Kansas & Texas Coal Co. Belsher while opening a keg of powder was badly burned about the face and hands by the explosion of the powder, which ignited from a spark off Belsher's pit lamp, and while his injuries will not necessarily prove fatal, it will take him a long time to get well, and the probabilities are that he will be crippled with his hands for life.

August 14, 1901, Richard Woodfin was injured by a fall of roof rock at mine No. 61, Kansas & Texas Coal Co. Woodfin was a driver at said mine, and when near the shaft bottom, coming out with his loaded trip, the switch was blockaded and he had to stop, and while waiting a piece of the roof fell on him and slightly bruised his back and side, the coal car took most of the weight, thus saving him from a more serious injury.

August 23, 1901, Aubrey Price was injured by a fall of rock at mine 61, Kansas and Texas Coal Co. According to information gathered, a loose rock extending from the mouth of the room where Price worked, nearly across the entry, fell on him as he passed, cutting thigh, side and otherwise bruising him seriously, but we were informed there were no bones broken.

November 9, 1901, Alex. Tilley was injured by a trip of full cars at mine 61, Kansas & Texas Coal Co. Tilley was a boy, 14 years of age, and engaged as a trapper, and while at work at said mine, in attempting to shut the door after a mule and his trip had passed through, he was knocked by another trip which was following close to the first trip, which the boy failed to see, until it ran into the door, knocked him down, catching his leg under the car, breaking both bones a few inches above the ankle.

November 16, 1901, William Patterson was injured by a fall of top coal at mine No. 66, Kansas & Texas Coal Co. Patterson was working in an entry and had left some top coal hanging behind, and while at work the coal fell on him, cutting his face and head considerably, bruising shoulder and side and breaking two of his ribs.

August 18, 1900, John Varschek was injured at the mine of the Helmet Mining Co., at Lingo, by the explosion of a shot. It seems that Varschek had lighted the shot and went out on the entry when more shots were fired, and supposing his shot had missed, he went back to his room when the shot went off, burning and bruising him severely. This man was working alone and it was some time after the accident occurred before he received any assistance. While he was seriously injured no bones were broken.

RANDOLPH COUNTY.

January 5, 1901, Lon Haggard was injured by a fall of slate on the entry in a mine near Huntsville, operated by the Morris Bros. Haggard was standing on the entry waiting for his car when a piece of slate fell on him, dislocating his hip, but escaped without receiving any other injuries.

February 22, 1901, William Watts and Joe Roman (two colored miners) were injured at the Morris mine, near Huntsville, from the premature discharge of a shot. From the information I gathered on my visit to the mine in a few days after the accident, the place being practically as it was when it occurred, no work having been done there. I discovered that the two men had drilled a deep hole and had it heavily charged with powder and were in the act of tamping the hole, when

the tamper struck sulphur in the hole, causing a spark of fire, which ignited the powder, resulting in the explosion which seriously and fatally injured the two men. We were informed that Watts died from its effects about a month after the accident, and Roman is still a cripple and unable to work. When the powder exploded in the hole it came out in a sheet of fire and flame and hurled back some coal and made an opening on the rib side. I attribute the cause of this accident solely to the carelessness and ignorance of the victims themselves.

TABLE V.—Accidents in Coal Mines

No.	Name of company or operator.	Name of injured person.	Date of acc't.		Occupation of the injured person.	Age	Single.
			Month	Year			
1.	Kansas & Texas Coal Co.	Thomas Downs.	Jan.	7.	1901	Driver.	24
2.	Rombauer Coal Co.	Lowery Robb.	"	9.	1901	Miner.	17
3.	Central Coal & Coke Co.	Thomas Latcham.	"	21.	1901	Shot-firer.	32
4.	Kansas & Texas Coal Co.	William Frost.	"	22.	1901	Driver.	21
5.	Central Coal & Coke Co.	R. D. Williams.	"	23.	1901	Shot-firer.	21
6.	Kansas & Texas Coal Co.	Nevrilla Silvio.	Feb.	1.	1901	Miner.	23
7.	Kansas & Texas Coal Co.	Fritz Starchiss.	"	7.	1901	Driver.	23
8.	Morris Coal Co.	Lon Haggard.	"	22.	1901	Miner.	27
9.	Morris Coal Co.	Wm. Watts (col'd).	"	22.	1901	"	23
10.	Morris Coal Co.	Jas. Roman (col'd).	"	22.	1901	"	23
11.	Morris Coal Co.	Jas. Prinson (col'd).	"	22.	1901	Driver.	23
12.	Kansas & Texas Coal Co.	Walter Grayham.	Mch.	15.	1901	Miner.	26
13.	C. B. Havens & Co.	Mansfield Tayler.	"	16.	1901	"	28
14.	C. B. Havens & Co.	Orisso Alexandro.	"	23.	1901	"	28
15.	Kansas & Texas Coal Co.	John Red.	"	2.	1901	"	35
16.	Kansas & Texas Coal Co.	Marvin Belscher.	Apr.	19.	1901	"	33
17.	Kansas & Texas Coal Co.	W. H. Haley.	"	28.	1901	"	30
18.	Rombauer Coal Co.	Evan Jones.	June	17.	1901	"	54
19.	Wear Coal Co.	Charles Karlson.	July	25.	1901	"	38
20.	Arthur Coal & Mining Co.	Lawson Glenn.	"	11.	1901	"	25
21.	Kansas & Texas Coal Co.	Antonio Oberto.	"	17.	1901	"	43
22.	Kansas & Texas Coal Co.	Richard Woodfin.	Aug.	14.	1901	Driver.	29
23.	Kansas & Texas Coal Co.	Aubrey Rise.	"	23.	1901	Miner.	21
24.	Merlin Coal Co.	M. Williams (col'd).	Sept.	20.	1901	"	28
25.	Northwestern Coal & M. Co.	Peter Dorr.	Oct.	14.	1901	Driver.	18
26.	Kansas & Texas Coal Co.	Geo. Stewart (col'd).	"	15.	1901	Miner.	27
27.	Kansas & Texas Coal Co.	Sebastian Targetta.	"	31.	1901	"	30
28.	Kansas & Texas Coal Co.	Alex. Tilley.	Nov.	9.	1901	Trapper.	14
29.	Kansas & Texas Coal Co.	Wm. Patterson.	"	16.	1901	Miner.	42
30.	Kansas & Texas Coal Co.	U. S. Kirtley.	"	14.	1901	Driver.	35
31.	C. B. Havens & Co.	Neil Malloney.	Dec.	16.	1901	Miner.	35
Totals.							22

by Counties for the Year 1901.

Married.....	No. of children.....	Accident.		Insured? Yes.....	No.....	Am't of insurance..	Nature of accident.	Coroner's verdict.
		Fatal.....	Non-fatal.....					
.....	.....	1	.....	1	.....	.....	Injured by mine car.....	Accidental death.....
1	4	1	.....	1	.....	.....	Premature shot.....	Unavoidable accident.....
.....	.....	1	.....	1	.....	.....	Windy shot.....	No inquest; cor. viewed body
.....	.....	1	.....	1	.....	.....	Fall of rock.....	Unavoidable accident.....
.....	.....	1	.....	1	.....	.....	Windy shot.....	.....
.....	.....	.....	1	1	.....	.....	Explosion of powder.....	.....
.....	.....	.....	1	1	.....	.....	Mine car.....	.....
.....	.....	.....	1	1	.....	.....	Fall of rock.....	.....
.....	.....	.....	1	1	.....	.....	Explosion of powder.....	.....
.....	.....	.....	1	1	.....	.....	Explosion of powder.....	.....
.....	.....	.....	1	1	.....	.....	Explosion of powder.....	.....
.....	.....	.....	1	1	.....	.....	Fall of roof.....	.....
.....	.....	.....	1	1	.....	.....	Premature explosion of shot..	.....
1	2	1	.....	1	.....	.....	Premature explosion of shot..	.....
.....	.....	.....	1	1	.....	.....	Fall of roof.....	Accidental.....
1	2	1	.....	1	.....	.....	Explosion of powder.....	.....
.....	.....	1	.....	1	.....	.....	Fall of roof.....	Accidental.....
.....	.....	1	.....	1	.....	.....	Fall of roof.....	No inquest.....
1	.....	1	.....	1	.....	.....	Going back on shot.....	Accidental.....
1	3	1	.....	1	.....	.....	Fall of roof.....	No inquest.....
.....	.....	.....	1	1	.....	.....	Fall of coal.....	Accidental.....
.....	.....	.....	1	1	.....	.....	Fall of roof.....	.....
.....	.....	.....	1	1	.....	.....	Fall of roof.....	.....
1	2	1	.....	1	.....	.....	Fall of roof.....	No inquest.....
.....	.....	1	.....	1	.....	.....	Car left trk; knocked out prop	No inquest.....
1	.....	1	.....	1	.....	.....	Fall of roof.....	Accidental.....
.....	.....	1	.....	1	.....	.....	Fall of roof.....	No inquest.....
1	1	.....	1	1	.....	\$2,000	Mine car.....	.....
1	1	1	.....	.....	1	.....	Fall of coal.....	.....
.....	.....	.....	1	.....	1	.....	Mine car.....	No inquest.....
.....	.....	.....	1	.....	1	.....	Fall of roof.....	.....
9	15	15	16	1	30	\$2,000		

254,000 tons to each life lost. 238,135 tons to each non-fatal.

INSPECTION BY COUNTIES.

ADAIR COUNTY.

(Production, 347,047 tons.)

Adair county can now be classed as very prominent among our large coal-producing counties. The year ending June 30, 1900, found this county ranking No. 15, now she stands fifth in the rank of coal-producing counties, and showing an increased production for the year of 92 per cent. No such increase at any time in this State has been made by any other county, and its continued increase in production may be reasonably expected for many years to come, as its surface is almost entirely underlaid with two workable seams of coal and comparatively speaking, its mining may be said to be in its infancy. This indicates how rapidly development in this coal field has progressed during the past year. Seven new mines have been opened and each equipped with the necessary machinery to do an immense business.

Danforth Post Office.

C. B. Havens Coal Co., H. T. Lemist, president; J. T. Reavlse, superintendent. This company owns and is operating two mines in the vicinity of Danforth, both having shipping connection with the Omaha, Kansas City & Eastern Railroad by spur switches, extending from the main track to the mines. Both have shaft openings and steam power is used at both mines to bring the product to the surface. The same seam of coal is worked at each and the same method of mining practiced. Ventilation is secured by the aid of ventilating fans at both of the mines.

Mine No. 1, Punch Kirby, foreman. This mine is located one-half mile east of Danforth. Shaft 50 feet deep. Equipped with machinery for hoisting, and ventilated by a 10-foot fan. On my first tour of inspection of the mines of Adair county during the past year, I visited this mine on the 23rd of October, 1900, and made a thorough inspection, and found it in good condition, with the ventilation satisfactory. Made a test of the air on second north entry, on the east side

and found 15,300 cubic feet of air passing, which volume furnished air to 68 men on the east side, and while the current was overloaded with work and more or less vitiated with impurities when it reached the last of the workings, yet the quantity was almost double that required by the mining laws, and the men did not suffer any inconvenience therefrom. The west side and the two main north entries off of the west were found well ventilated and in good condition. I discovered on this visit that a new escapement shaft had been sunk at the proper distance from hoisting shaft, and a good, convenient stairway built in same for an avenue of escape for the employes in case an accident to main shaft. I returned to this mine on the 9th of April, 1901, made a thorough and a careful inspection and found it in excellent condition, with the ventilation fully up to the requirements of the law, and every other feature about the mine satisfactory. Tests of the ventilative currents was taken at five different points in the mine on this visit, and each test showed that the required amount of air prescribed by the mining law was passing. I inspected every foot of air-courses on this visit and found them high, wide, clean and roomy.

The pernicious habit of firing from 15 to 20 kegs of powder at the noon hour every day was practiced at this mine at the time of this visit, and entering the mine while the shots were being fired, I started to inspect the condition of the same as soon as the miners commenced working after dinner, and while we traveled in the direction of the air currents we did not encounter or come in contact with powder smoke. Indeed, we failed to detect or notice a particle of smoke or any semblance of it in any part of the mine, although two shots were fired at a large number of places, thus showing plainly the healthy condition of the mine and its practical and careful system of ventilation. Although only a few days previous to this visit, some of the radical element working in this mine sent a complaint to the Governor, claiming a deficiency in the ventilation, which complaint was entirely uncalled for.

I visited the mine again on the 27th of August, 1901, and found everything very satisfactory. The air on the north entries off the east was found fresher and stronger than on previous visit and less number of men were working in that current. The air on the west side was all right also at this date, I made another careful inspection on the 26th of December and found the mine in a satisfactory condition, but as only a few of the miners were at work at this date no test of the air was taken. All doors were found in good repair and the air-courses in good condition to carry the air. Coal about 44 inches thick and worked on the room and pillar plan, and extracted by blasting it off

the solid. The roof over the coal is of a friable nature. It cuts, crumbles and falls when exposed to the air, and requires a large amount of timber set to keep it secure. There were from 100 to 125 working in the mine at the various dates of inspection, and 65 cents per ton paid for mining unscreened coal. The product is shipped and consumed at Council Bluffs, Omaha and points west and northwest.

Mine No. 2, Mose Simpson, foreman. This mine is located half mile south of Danforth, and connected with the K. C., O. & E. R. R. by a spur switch, extending from main track to the mine. Shaft 65 feet deep, and equipped with first-class machinery for hoisting, ventilating and operating the mine. This is a new mine, shaft sunk and mine opened out during the spring and summer of 1901, when coal was struck at the above mentioned depth. The equipment of the mine consists of a pair of Litchfield engines, with 16x30 inch cylinders connected to a 6-foot drum working on first motion. The machinery is set on a good rock foundation and enclosed by a good engine and boiler house. Steam is supplied by two 12-6-inch flue boilers, 54 inches in diameter and 16 feet long. The headgear and top building are well constructed, and conveniently arranged. The Coal is dumped from a self-dumping cage into a hopper, where it is weighed on a hopper scale, after which it is delivered to a shaker screen, which screen cleans and grades the coal into different grades and sizes. Three tracks are provided for the different grades, with plenty of yard room to hold full and empty cars. The escape and hoisting shafts were both sunk at the same time. The escapement shaft is divided into two compartments, one of which for the air passage way proper is 7x7 feet, and the stairway 3x7 feet. The stairway is constructed in sections, about 10 feet long, with steps 24 inches wide, set at an angle of about 40 degrees, making the descent and ascent easy. The fan house is located about 350 feet from hoisting shaft. The fan is 14 feet in diameter and is operated by a 10x20 inch cylinder upright engine, connected direct to the fan shaft. It is set on a substantial rock foundation, and the fan house and casing are so constructed as to allow the fan to force or exhaust as the requirements of the mine may be. I made a thorough inspection of this mine on the 28th of August, 1901, and found the work confined to driving entries preparatory to opening it up. Connection had been made between the two shafts, and the fan was set, but was not running at this date, as no steam connection had been made. The mine will be operated on the treble entry room and pillar plan, and the underground plan and opening contemplates entries turned at right angles from main entries. and at a distance of about 350 feet from the bottom of the shaft on each side an overcast will be erected, thus making two separate and

distinct currents of air on each side. All entries and airways are constructed with a view, should it become necessary, to ventilate either pair separately. The shaft bottom is well constructed and arranged for the handling of a large tonnage, and that with rapidity and economy. All the full cars will be caged on one side, or west side of the shaft, and the empties taken out on the other side. This system is practically new and very little practiced in our mines, and while there is a diversity of opinions among mine men as to which plan is the best, the old system of caging on each side of the shaft, or the new one, the writer favors the latter for various reasons. The shaft bottom is high, wide and roomy and well secured by large and strong timber, very practically set. The mine, as equipped and planned, contemplates a large output and will soon be a great factor in the coal production of Adair county. I made another inspection of this mine on the 26th of December and found everything in first-class condition. Cross entries had been started on each side and about 40 men employed. I discovered that the roof stands better here than in mine No. 1, and requiring less timber. Thickness of coal, mode of working and price paid for mining is the same as that at mine No. 1.

Fegley Post Office.

Rob't Besanko is operating a mine near Hazel Creek. Shaft 45 feet deep hoisting by a horse. This mine is working the upper seam, which is about 4 feet in thickness. A small furnace is used to furnish ventilation. The mine is only operated in the fall and winter to supply local trade. All the coal is taken away from the mine in wagons and consumed in the surrounding country.

P. McCrabe is operating a mine in the same locality, shaft 25 feet deep hoisting by a horse. Coal about 4 feet thick and worked on the room and pillar plan to supply local trade.

Thos. Scott operates a mine on the Culler land in the fall and winter to supply home trade.

F. I. Miller operates a mine near Hazel Creek during the cold season to supply local trade.

There are a few other small mines operated in the vicinity of Fegley during the winter months, but only on a small scale to supply home consumption. The section of country bordering Hazel Creek and along the banks of the Chariton river is nearly all underlaid with a good vein of coal, which is of fine quality for all purposes. Extensive mines could be opened out if nearer to a railroad, but being 8 or 10 miles away from shipping facilities the output of its mines is very small and confined to local demand.

Kirksville Post Office.

D. C. Scott is operating a mine on Hazel creek about 10 miles north of Kirksville and its product is hauled away in wagons and a large portion of it consumed at Kirksville. The mine is a shaft opening, 52 feet in depth and hoisting is done by a horse. Coal 4 feet thick and worked on the room and pillar plan. Employment is given to 10 or 12 men.

Kirksville Coal & Construction Co.

This company sunk a shaft about half a mile west of Danforth and was setting up the machinery at date of my last visit to the mines of this county. A switch had been constructed from the railroad to the mine, but as no coal had been taken out or the mine developed, I must leave any further remarks concerning it to the next report.

Novinger Post Office.

Rombauer Coal Co., R. G. Rombauer, president and manager, and Martin Rabbitt, superintendent.

This company owns and is now operating two mines in the vicinity of Novinger, both of which have shipping connections with the Omaha, Kansas City & Eastern railroad. Both mines have shaft openings, are equipped with machinery for hoisting, are working the same coal seam and on the same method; ventilation is furnished to both mines by the aid of fans.

Mine No. 1 is located about one mile west of Novinger and connected with the O., K. C. & E. R. R. by a switch. Shaft 50 feet deep, equipped with very fair machinery for hoisting.

The ventilation is produced by a 10-foot fan, which furnishes plenty of air to the mine. I made the first inspection of it on the 24th of October, 1900, and found it in good condition, the volume of air was double the amount required by the mining laws, but having a long distance to travel around the mine in one undivided current, I found it was overloaded with work and became very impure before it reached the last of the workings; but on my route and further into the mine I discovered that preparations were being made to split the air volume and make another current. I made another inspection on the 10th of April and found the mine in excellent condition and the ventilation was very satisfactory. I discovered that an overcast had been erected over the main north at the 11th east entry and the air was conducted around in two separate currents, making the ventilation stronger and the air fresher in every part of the mine. I inspected it again on the 27th of August and found everything

satisfactory. I returned again on the 26th of December and made another careful inspection and found the mine in good shape, with the laws closely observed and obeyed. The coal territory of this mine all lays on the north side of the shaft, confining all the work to one side; the mine having been a large producer, naturally the work traveled very fast and the coal is now hauled three-quarters of a mile; the air currents also have a long route in passing through the workings. Coal 45 inches thick and worked on the room and pillar plan. The roof is of the soapstone and slate mixture, strong and hard, stands well and is easily secured by timbering. The entries are high, wide, clean and dry, with good roadways. About 100 men and boys employed, and mining is paid for at the rate of 65 cents per ton for unscreened coal. The product is shipped to Omaha and points west and northwest.

Mine No. 2 is located three-quarters of a mile directly north from the Novinger depot building, and has shipping connection with the Omaha, Kansas City and Eastern railroad by a spur switch. Shaft 70 feet deep and equipped with first class machinery. The sinking of shaft, construction of buildings, the placing of the equipment of the mine, as well as the construction of the switch was begun during the past summer and at the close of the year I found 50 miners employed and the company daily putting on more men. The equipment of the mine consists of a pair of engines with twin cylinders geared up one in four, they have 10-inch bore and 12-inch stroke, connected direct to a 4-foot drum. The engines were built by the Eagle Iron Works, in Des Moines, Iowa, designed by the Aulman Bros., who have paid great attention to the equipment of coal mines. The steam is furnished by two 2-flue boilers 20 feet long and 48 inches in diameter, so arranged that they can be used either separately or jointly. All the machinery is set on solid foundation laid and built with vitrified brick and cement, and all enclosed by commodious buildings. The engine house, including the boiler room, is 20 by 50 feet. The engine room is 14 by 20 feet, being entirely separated from the boiler room. The head gear is 50 feet from the ground to the pulley wheels, and 33 feet from top rail to top landing from which the coal is dumped. The coal chute is constructed of boiler iron and so arranged as to make 6 grades of coal: the smallest, the first grade, is called nut mixture. This contains coal from slack up to three-quarters of an inch, through a bell-shaped revolving rotary screen. The second grade, nut coal, is from three-quarters to one inch. Third grade, the company calls, cocoa nut coal, which is from one inch to two and one-half inches in size. Fourth grade, large cocoa nut from two and one-half to four and one-half inches. Fifth grade, mine run coal, and the sixth, lump. All the screens are so arranged as to be covered up with a solid flat sheet in a few seconds, showing that

the company can make lump coal from that which contains everything above one inch, or lump coal which contains everything above two and one-half inches or lump coal which contains everything above four and one-half inches, which is a great saving.

The yard room and track switches are very systematically arranged, and we do not believe that there is to be found more convenient or more practical shaft switches constructed at any mine in this or any other state in the country. The tracks are constructed in a shape that is known in railroad parlance as a switch ladder. The track has a run around, permitting the locomotive which sets in empties and takes out loads, to pass the chute and perform the work without in a particle interfering with the loading at the shaft. A blacksmith and a machine shop is also provided for at this mine, 20 feet wide by 30 feet long, with an L attachment to be used as an office for the mine foreman. The shop is equipped with lathes, power punch, cutter, drill press, emery wheels, grindstone, formers for coal box irons, a modern cart iron forge and all other tools necessary for the economical management of a smith shop in making all the repairs of the mine.

The shaft is $7 \times 13\frac{1}{2}$ feet, partitioned into cageways and curbed by strong oak timber from top to bottom. The escape shaft is located 300 feet from hoisting shaft and is 6 feet wide by 11 feet 6 inches long, partitioned off into two compartments, one of which for the air passage way proper, while a stairway is built in the other for a manway for the men to go up and down to the mine. A 12-foot ventilating fan is set on top of the escape shaft carrying blades 4 feet wide. The fan house and casing is so constructed as to allow the fan to force or exhaust as the requirements of the mine may be. The mine is operated on the double entry room and pillar plan, and at a distance of about 300 feet from the shaft bottom overcasts will be erected which will give each side of the mine two separate and distinct currents of air, making in all four currents, which is a very practical and up-to-date system of ventilating mines. The double track and switches at the shaft bottom extends 150 feet to the south, and the same distance to the north, which are the main entires, while the cross entries will be driven in an east and west direction. The mine as equipped, planned and opened out, contemplates a large output and will soon be a great factor in the coal production of this county. About 40 houses have been built by the company near the mine for the accommodation of the miners. The houses are all new, containing from 3 to 4 rooms to suit families. They are built of the best grade of lumber and other material, and are as commodious as material and workmanship can make them. The mine being newly sunk and equipped I only made one inspection of

it the latter part of the year, when I found the communication between the two shafts had been made and the ventilation volume was circulating around in great quantity. Indeed the inspector does not expect much annoyance and work in inspecting mines so well equipped as this mine is, as it is up-to-date in every respect. The coal is about 45 inches thick and overlaid by good roof and easily secured. The bottom of the shaft is high, wide and roomy, and secured by strong timber. The product is shipped to points west.

Kansas City Midland Coal & Mining Company. Bernard Corrigan, President. Jas. Ward, Superintendent.

This company owns and is operating two mines northeast of Novinger. Both mines are new, having been sunk and developed since the last annual report was issued; both have shaft openings, are working the same seam of coal, on the same plan and under the same management; both are equipped with steam power for hoisting, and ventilation is furnished by the aid of fans at both mines.

Railroad connection is obtained by a switch 6,000 feet in length extending from the main track of the Omaha, Kansas City and Eastern railroad to mine No. 1, and extended 5,000 feet still further to connect mine No. 2 with the same railroad.

Mine No. 1, Pat Riley, Foreman. This mine is located one mile northeast of Novinger; shaft 80 feet deep, and equipped with good machinery for hoisting. The pit top and head gear are very well constructed and the equipment of the mine embraces many modern improvements. The escapement and hoisting shaft were both sunk at the same time. The escapement shaft is divided into two compartments, and a stairway is built in one, while the other compartment is used for the passage of air. The ventilation is furnished by a 12-foot fan set on top of the escape shaft, which is well constructed and forces the air into the mine. I made the first inspection of the mine on the 24th of October, 1900, and found it in excellent condition. The ventilative volume is divided at the bottom of the downcast to the north and south, from which entries it circulates around the east and west entries in great quantities. I inspected the mine again on the 10th of April, 1901, and found it in a satisfactory condition, with the ventilation furnished double the amount required by law, which was also fresh and healthy. On the 27th of August I visited the mine again and found it in good condition, but as the mine was not running at that date and no men at work no notes of the air was taken. I visited the mine again on the 27th of December, 1901, and made a thorough inspection, the result of which was very satisfactory. The ventilation was found strong and fresh all around the mine, the entries high, wide, dry, safe and clean, and the ropes, cages safety catches, with all the machinery,

in first class condition. Coal 3 feet thick and worked on the double entry room and pillar plan. The roof over the coal is of the soapstone and slate variety, strong and hard, stands well in rooms and entries, requiring very few timbers to keep it secured. About 130 men employed. The product is shipped to Kansas City, Omaha and points west and northwest.

Mine No. 2, Ed White, Foreman. This mine is located one mile north of mine No. 1, and two miles northeast of Novinger. The switch from mine No. 1 was extended to connect with this mine, making its shipping connection with the same railroad as the latter. The shaft is 147 feet in depth and equipped, not only with first class machinery, but embracing all other modern improvements. The engines were built by the Eagle Iron Work of Des Moines, Iowa, consisting of twin cylinders 12x16 inches, connected to a 6-foot drum, working on second motion. The steam is furnished by two tubular boilers 14 feet long and 54 inches in diameter, having 34 4-inch flues in each boiler, made by the same firm. The machinery is set on solid foundation, laid with vitrified brick and cement 5 feet deep, and all enclosed by commodious and convenient buildings. The boiler room is 32 feet by 30 feet, and the engine room 24 feet wide by 28 feet long and entirely separated from the boiler house. The top landing and tipple house is 28 feet wide and 42 feet long, the pit head or tower is 58 feet high to top of head gear and 32 feet to landing. The coal is dumped from a self-dumping cage into a hopper, where it is weighed on a hopper scale, after which it is delivered to a screen, which screens and grades the coal into different sizes and different tracks are provided for each grade. The hopper pocket is 14 feet long, 8 feet wide, with a 9-foot fall for the coal to drop when discharged from the cage. A blacksmith shop is also provided for at the mine 28 feet wide by 34 feet long, equipped with a modern cast iron forge, drill press, cutter, punch, formers for coal box irons and all necessary tools to make new and repair pit cars and other repairs of the mine.

The escape and hoisting shafts were both sunk at the same time, the hoisting shaft is 7x14 feet in the clear and curbed with 3-inch white oak lumber, 6 by 6 inch girders, and bunting 4 by 8 inches set edgeways in the center and extra bunting of same size set at each end 15 inches apart. The escapement shaft is 7 by 7 feet and divided into two compartments, one of which the air passage way proper is 3 by 7 feet and a stairway is built in the other compartment for an avenue of escape for the employes in case of an accident to main hoisting shaft. The escapement shaft is located about 350 feet from the hoisting shaft, and a fan is set on top of same, operated by a 10 by 12 cylinder horizontal engine connected direct to the fan shaft. The fan house is so constructed as to allow the fan to

force or exhaust as the requirements of the mine may be. The mine is operated on the double entry room and pillar plan and the underground plan contemplates entries turned at right angles from main entries, and at a certain distance from the shaft bottom on both sides of the shaft overcasts will be erected which will give each side of the mine two separate currents of air, making in all four currents; all entries and air-courses are arranged and constructed with a view to ventilating each separately should it become necessary.

The mine as planned and equipped is destined to be a great producer. The bottom of the shaft is 14 feet wide and 8 feet high and timbered with 12x12 inches square sawed timber 3 feet apart and practically set. A double track is constructed a distance of 200 feet on each side from the shaft towards the coal face, making it very convenient to handle a large amount of coal. I made one inspection of this mine on the 27th of December and discovered that two sets of cross-entries had been started and about 40 men were employed. The coal will average about 44 inches in thickness and is extracted by blasting it off the solid. The roof over the coal is of the soapstone and shale variety, making a first class roof and requiring but very little timber to keep it safe and secured.

A large number of houses and a supply store have been built at the mines for the accommodation and home of the miners. The houses are all new and quite a number of them have been built on the cottage plan, containing 2, 3 and 4 rooms to a house, to suit all sized families. There were 35 new houses built at mine No. 1 during the past year, one of which has 14 rooms and is used as a boarding house. One of these houses has 6 rooms, 7 have 4 rooms, and 26 are 3-room houses, all of which are built of good material and are well finished. There are also 20 new 4-room square houses built at mine No. 2 and 6 new 6-room houses built at the same mine, all of which are commodious, convenient, plastered, and well finished, all painted in light color, trimmed in suitable panels, giving the camp a bright, cheerful appearance.

As these mines are yet new, we shall have to wait their further development, before being able to report fully concerning their practical operation. The product from the mines is shipped to Kansas City and points west.

Manufacturers' Coal & Coke Company. H. F. Redding, President, and G. W. Evans, Superintendent. This company owns and is operating two mines at Ninevah, which is a mining camp located 3 miles north of Novinger. This camp came into existence during the past summer after this company had sent prospectors to the new coal field with an outfit of prospecting tools in search of coal, they soon succeeded in discovering the

black diamond in an inexhaustible quantity and coal land was bought and leased. With the construction of four miles of railroad, the building of a supply store and 75 residences for homes and the accommodation of the miners, has in connection with the opening of three new mines transformed a section which only a few short months ago was a vast wilderness—into a scene of activity where now a thriving town invites the hundreds of miners which are needed and will be added to its population. When these new mines receive their full quota of employes the development of an immense coal field, so far merely tapped, will work wonders in the advancement of this county to the very forefront of our coal producing counties. The progress of the coal industry as now realized by Adair county was predicted by me in several of my previous reports, and while it is no surprise to me, yet it is a matter of great gratification to me to see her proving herself possessed of one of the greatest coal fields in the State.

We have been informed that this company contemplates extending this new railroad further north to the State line and intersect with the coal field of southern Iowa, which seam extends and underlies Putnam, Schuyler and Adair counties, and as this new railroad extends further north it will come in contact with the upper or the Iowa coal seam and wherever its worked proves to be of better quality for domestic purposes than the seam now worked at these mines. The upper seam is now mined within 3 miles to the present terminus of this new branch and as it extends further north it will traverse over two workable seams of coal, both of which are of good thickness and can be operated profitably.

Mine No. 1 is located half a mile south of Ninevah. It is entered by a slope and ventilated by a 12-foot ventilating fan. The coal is taken out to the surface by steam power and over an elevated trestle and landed at a large building erected for the purpose of weighing and dumping the coal into a chute, then screened and graded into different grades and sizes and loaded into cars; 3 tracks have been constructed and built under the chute to load the various grades and sizes. The mine is operated on the treble entry room and pillar plan, the main entry running west and cross entries are turned at right angles to the north and south. The ventilative volume of air was conducted around the workings in one undivided current at date of last inspection, but preparation was being made to split the air into separate currents and ventilate each set of entries by a current to itself. After making a thorough inspection of the mine on the 27th of December I was more than gratified at its excellent condition and development during the short time it had been in operation, the very practical character of all the improvements made with the economic arrangements in space employed are admirable, the fan as constructed for ventil-

ating purposes gives most satisfactory results—while running at 15 revolutions per minute it was found to be producing a volume of air double the quantity required or necessary to keep the air of the mine fresh, healthy and clear of smoke, the current was also conducted around the mine in a practical and systematic manner. The coal will average about 45 inches in thickness throughout the mine and running regular and of a very uniform thickness, and we could not discover a place in any part of the mine that furnished even a suspicion of a fault, horseback, clay-slip or other trouble to mar the face of a clean, healthy seam of coal. The roof over the coal is of the shale-soapstone variety, strong of its nature, standing well in rooms and entries and very easily secured by timber. The entries are high, wide, dry and clean, and considering the condition generally the coal, ventilation, roof, roadways and the practical management, it can be easily termed a first class mine. There were 70 men employed at date of this inspection, and more men are daily being put to work. The product is consumed at Kansas City and points west.

Mine No. 2 is located one-half mile northeast of Ninevah and about one mile from No. 1. This mine also is entered by a slope, and preparation was made at date of my visit to the mine to build and set the machinery to haul out the product by steam power. The branch railroad had not reached this mine at this time, and while a large amount of coal had been taken out, and considerable entries had been driven, the shipment of coal had not commenced, but a large force of men were found at work grading the railroad and building the trestle and tipple house, constructing the track and setting the machinery and long before this report will be in the hands of its readers this mine will be producing a large tonnage.

The coal at No. 2 is about the same thickness as that at mine No. 1 and practically about the same character of roof, yet I noticed on my visit to the mine one thing unlike the conditions existing at mine No. 1, that is a bench rock in the coal of considerable thickness at the face of the main south entry, which will prove an annoyance and entail an additional expense in handling it, and we hope will soon run out, and indications pointing that way looked favorable in a cross-cut on the west side as the rock was running low and thin as though it would likely pinch out, while on south and east the rock was fully 12 inches thick about the place the clay band occupies from 10 to 12 inches from the bottom. The mine will be operated on the treble entry room and pillar plan, and ventilated by a fan, but no ventilating appliance had been applied at date of my visit, or system of ventilation adopted, and will write further about this mine after it is developed further. Both of these slopes are practically opened out and timbered. The timbers are 12x12, well set and lined, 6 feet high and

wide enough for a double track in each slope, and in the every near future these mines will be great producers. In fact mine No. 1 has an output of 350 tons per day already and rapidly increasing on that output. About 75 houses have been built at Ninevah containing from 3 to 4 rooms to a house, all of which are plastered and painted, giving the camp a respectable and a cheerful appearance, but as the cold weather retarded the completion of the improvements will write more lengthy in next report.

Nenevah Coal & Mining Co. Mike McHugh, Superintendent. Mine located south of Ninevah and between mines Nos. 1 and 2 of the Manufacturers' Coal & Coke Co. This mine has a drift opening with a connecting track elevated sufficiently above the railroad track to permit of dumping. The coal is brought to the surface by machinery and landed on a tippie house from which place the coal is discharged into the chute, where it is cleaned and graded into different grades and sizes. The same seam of coal is worked here as that mined at the mines in the surroundings of Ninevah and Novinger, and the same method of mining is practiced here. The description of any of those mines suits the inside workings of this mine, in as far as the thickness of the seam, mode of working and the character of the roof is concerned. Ventilation will be furnished at this mine by the aid of a furnace, but there was no ventilating appliance built or any plan of ventilation adopted at date of my visit, and the mine only just started with 12 men employed. The product is shipped over the Omaha, Kansas City & Eastern R. R.

John Paris is operating a drift mine in close proximity to the last named mine and on the same coal seam. Mine only operated during winter month, and the coal is consumed in the vicinity.

Stahl Postoffice.

American Fuel Company, A. F. Loveland, president; James Graham, superintendent. This company owns and is operating two mines in this place, both of which have shipping connection with the O. K. C. & E. R. R. Both mines have drift openings, same coal seam is worked with an underground connection, and for all practical purposes may be considered as one mine with two openings. The same furnace is used to ventilate both mines, which is set at Mine No. 1. I made an inspection of these mines on the 25th of October, 1900, and found a deficiency in the ventilation at Mine No. 1. The east part of this mine had been suffering from faulty coal which greatly affected the roof which fell and retarded the airways, thus causing deficiency in the air, but I discovered another air shaft in course of construction and was nearly down to the coal at this date which would increase the air volume and make it fresher on the straight east. I

found the air satisfactory in Mine No. 2 at this date; another connection was to be made between the east entry at Mine No. 2 and the third north from No. 1, which, as soon as made, would make the air fresher and stronger. April 11th I made another inspection of these mines, and as on my former visit I found deficiency on the east part of Mine No. 1, and was surprised to discover that no connection had been made with the new air shaft as yet. To make matters worse several rooms had fallen in the long wall work, thus checking the current from passing through, which made the air very bad at that part of the mine, and the company was requested to make the communication through between this side and the new air shaft as speedily as possible. On the 29th of August I visited the mine again and made another close inspection. I discovered on this visit that the connection had been made between the straight east and the air shaft, and the air was found better in that part, but not fully satisfactory, and recommendation was made for further improvements on the east as well as at several other parts in both of the mines, as checks in the air was encountered at various places. There has not been a practical system of ventilation practiced at these mines for the past three or four years, and the miners have suffered thereby from insufficient ventilation, and to make matters worse the mines have had several changes in owners and managers during that time, and the present management worked under great disadvantage when it took charge of the mine. I visited it again on the 28th of December and found it in much better condition with the ventilation good all over the mine. I discovered the furnace had been removed and built at the new air shaft which was giving so much better results and was passing strong fresh currents of air to every part. The ventilation was better on this visit than we have found it for years. The coal from both mines was now taken out through Mine No. 1. The coal at this mine runs irregular and faulty, and the roof soft and friable when coming in contact with a fault thus causing great annoyance and trouble to keep air courses open and of sufficient area to pass the required amount of air through to properly ventilate the mine. Coal about 42 inches thick, and worked on the longwall plan. About 100 men employed. The product is consumed at various towns along the line and at Omaha and points west.

The company is opening another mine west of No. 1 across the branch. This mine is entered by a drift and ventilated by a furnace. The same seam is worked here on the method and under the same management as that of Mine No. 1.

Spring Valley Coal Co., Jeff. Bedford, president; Jno. Leonard, foreman. Mine located one-half mile east of Stahl, and has shipping

connection with the O., K. C. & E. R. R. Mine entered by a drift and ventilated by a furnace, which was giving very fair results at dates of inspections. I made three inspections of this mine during the period covered by this report, and found it in very good condition at each visit. On my inspection made on the 29th of August, 1901, I discovered that considerable improvement had been made since my former visit; a larger furnace had been built which was furnishing more air into the mine. Dumps and ditches had been also made and the roadways corduroyed which made the roads dry and clean and the mine found in better condition than on any former visit. Coal 38 inches and worked on the longwall plan. Forty men employed in winter, and about 20 in summer. Eighty-two and a half cents per ton is paid for mining. The product is consumed at points west.

Karl Mainwald is operating a mine three miles north of Stahl. Mine entered by a drift and ventilated by a small furnace, and only running during the cold weather to supply home demand.

AUDRAIN COUNTY.

(Production, 44,066 tons.)

Audrain county stands 12th in rank of the coal-producing counties of the State. It is situated on the eastern border of the coal belt, and nearly all of it is underlaid with coal. Mining is carried on at various points throughout the county, but more extensively at Farber, Martinsburg and Vandalia, where shipping connection is made with the Chicago & Alton and Wabash railways. The same seam of coal is mined throughout the county, but in some sections faults are encountered, where the coal is cut out entirely, while at other places it dwindles down so thin as to make the vein unworkable. Ten mines were operated here during the past year and 137 men and boys were employed. Description of the principal mines is as follows:

Farber Post Office.

Farber Coal Co., C. Peterson, superintendent. Mine located at Farber, and has shipping connection with the Chicago & Alton R. R., by a switch. Shaft 104 feet deep, and operated by steam power for hoisting. I made a thorough inspection of this mine on the 8th of October, 1900, and found it in excellent condition, with the ventilation fully satisfactory and the mine clean and healthy. I visited the mine again on the 15th of June and found it in good condition and satisfactory. November 20th I made another thorough inspection and found the inside workings in good condition, with plenty of air circulating around

every part of the mine, but the cages were without safety catches and the company was instructed to equip the cages with catches at once. Coal 28 inches thick and worked on the longwall plan. About 30 men employed, and 91 cents per ton is paid for mining. The product is consumed at Jefferson City, Mexico and local towns along the line of railroad.

Martinsburg Post Office.

Kreiger Coal Company, Oscar Krieger, manager. Mine located one-half mile east of Martinsburg and connected with the Wabash railroad by a switch. Shaft 107 feet deep; operated by steam power. Ventilation is furnished by a furnace with good results. The coal in some parts of the mine runs irregular and faulty, causing extra expense to operate it. The mine is also making a large amount of water which seeps in through the roof. I inspected the mine on the 2nd of October, 1900, and found the ventilation and condition of it satisfactory. I made another inspection on the 15th of June, 1901, and found everything in good condition. I visited it again on the 20th of November, but as the mine was not running, nor any steam up, no inspection was made. Coal 28 inches thick and worked on the longwall plan. About 20 men employed, and 91 cents per ton paid for mining. Coal consumed at local towns along the line of railroad.

Vandalia Post Office.

Vandalia Coal Co., Thos. Green, superintendent. Mine located one mile west of Vandalia and connected with the Chicago & Alton railroad by a switch. Shaft 75 feet deep; equipped with machinery for hoisting. Ventilation is furnished by an 8-foot fan, which is giving good results. First inspection was made on the 8th of October, 1900, and mine found in good condition, with a strong current of air passing around the face of the workings. June 14, I made another inspection and found that the requirements of the law were well observed. The airways were found in good shape and the mine in good condition. I made another inspection on the 18th of November and found everything satisfactory. Coal 28 inches thick and worked on the longwall plan, paying 91 cents per ton for mining. From 30 to 40 men employed. Product consumed by the railroad company.

The Mississippi Glass Company is operating a mine at Vandalia within the city limits. Shaft 65 feet deep and operated by steam power of hoisting. The coal is underlaid with good fire clay, which is taken out at another part of the mine, leaving the coal for roof. The clay mine is worked on the room and pillar plan and requires large tim-

bers to keep up the roof. This mine was formerly owned and operated by the Vandalia Coal Co., but recently the present owners bought the plant and put in new machinery, improved the mine and enlarged its capacity. A fan has been installed in place of the old furnace and ventilation is now fairly well maintained. I inspected the mine on the 9th of October, 1900, 12th of June and again on the 18th of November, 1901, and found it in very fair condition at each visit. Coal twenty-eight inches thick and worked on the longwall plan. Nearly all the coal produced is consumed at the mine in the manufacture of the clay into bricks and other articles. Employment is thus furnished to quite a number of men and boys around the mine and brick works. Mining is paid at the rate of 91 cents per ton.

Standard Coal Co. Mine located at Vandalia. Shaft 80 feet deep, and operated by horse power. Considerable improvement has been made at this mine during the past year. An escape shaft was sunk, a new horse power apparatus erected, new pit head, top house, chutes, pump house and a blacksmith shop erected. This mine has no shipping connection, and while it has a very good output as a local mine, it could be largely increased if it had shipping facilities. The coal is taken away from the mine in wagons, and while a large portion of the product is consumed in the immediate surroundings, considerable is also shipped to other towns along the Chicago & Alton railroad. Mining is paid at the rate of ninety-one (91) cents per ton, and employment is given to about 25 men in winter and 10 in summer.

There are other parties taking out coal on a small scale during the winter months in the neighborhood of Quiver, Hazel Creek, Ladodnia, Worcester and Benton City. The product from these mines is consumed at home.

BARTON COUNTY.

(Production, 183,983 tons.)

Barton county is largely underlaid with the coal measure formation, and coal is mined in nearly every township in the county, but in some sections on a limited scale only, owing to the shallowness of the covering, which renders underground mining impractical, and a large portion of the coal mined throughout the county is obtained by striping. In the year 1891 this county ranked ninth on the list of the coal-producing counties of the State, with an output of 63,026 tons, but in the year 1896 she fell back to twelfth place, with an output of 37,570 tons of coal, but in the year 1900 new mines were opened and she advanced to 8th in rank, with an output of 141,520 tons, and in the pres-

ent report she holds 7th place. We expect a steady increase in the output of coal from this county for years to come, as several new and very large mines are being opened out in the vicinity of Minden, which will place this county again among the large coal-producing counties of the State. Following is a full description of the principal mines relative to their sanitary and other conditions as found at dates of inspection:

Lamar Post Office.

There are several parties who operate mines in the surroundings of Boston and Lamar in the fall and winter to supply the local trade. The coal is only about 14 inches in thickness. The mines are entered by drifts and the coal mined on the room and pillar plan. It is taken away from the mines in wagons and consumed at Lamar and vicinity. The names of the respective operators and output of every mine, with other information, will be found in the statistical table of this county with this report.

Liberal Post Office.

Jos. Kaiser operates a mine near Liberal to supply local trade. Mine entered by a shaft and ventilated by a furnace. Coal 28 inches thick and worked on the room and pillar plan.

Joseph Travis operates a mine near Liberal. Mine entered by a slope and only operated during winter season to supply local demand.

Jno. J. Prosser operates a mine in same locality to supply home consumption.

Geo. Boulware operates a small mine near Liberal during the winter season to supply the local demand.

Rogers & Nicholson operate a mine on the Walser land. Mine entered by a slope and the coal is hauled in wagons, loaded on cars, and shipped over the Mo. P. R. R.

There are several others who operate mines on a small scale in this locality during the winter season to supply home demand.

Minden Post Office.

Western Coal & Mining Co., Major R. M. McDowell, general manager; Jas. Gardner, general superintendent; W. A. Johnson, foreman. Mine located near Minden and has a shipping connection with the Mo P. R. R. by a spur switch extending from the main track. Shaft 56 feet deep and equipped with first-class machinery for hoisting and ventilating. I visited the mine on the 14th of November, 1900, and found it in excellent condition. I discovered on this visit that the fan house had been built as contemplated and the fan set, and while only running

at a speed of 40 revolutions per minute, was passing double the amount of air through the mine that is required by the law. This volume was divided into four separate currents, the main currents were traveling from the bottom of the down-cast over the east and west entries to their terminus where it was divided to the north and south entries, the currents from the north returning to the up-cast over air crossings, giving very satisfactory results. I visited the mine again on the 6th of June, 1901, and made another careful inspection which resulted very satisfactory. The ventilation was found strong and fresh at every point, and the mine generally in good condition. I discovered all the entries high and clean, and the mine practically operated and well managed. I made another inspection of this mine on the 18th of October, 1901, and found it in excellent condition, with the ventilation fully up to the law. All the entries are high and clean, with good roadways. Coal about 34 inches thick, and worked on the treble entry system, or in other words an aircourse is carried on one side of the entry and a smoke room on the other side which is equivalent to an aircourse on each side and a very practical method it is, too, where so much powder is used. About 100 men and boys employed; 65 cents per ton is paid for mining mine run coal. Product shipped over the Missouri Pacific Railway.

Hall & Fletcher Coal Co.—Mine located one mile northwest of Minden, and has shipping connection with the Mo. P. R. R. by a spur switch extending from the main track. The mine is entered by a slope, and the product is taken out by machinery. Ventilation is produced by the aid of a furnace which was giving good results at dates of inspection. The coal is about three feet in thickness and worked on the double entry room and pillar plan. Mining is paid for at the rate of 65 cents per ton for unscreened coal. Employment is given to 30 hands. The coal is shipped over the Mo. P. R. R.

Swigart & Sons are operating a mine one mile north of Minden to supply home trade. Shaft 30 feet deep; operated by horse power. Ventilation is furnished by a small fire basket. Coal 32 inches thick, and worked on the double entry room and pillar plan. From 8 to 10 men employed during the winter. The coal is taken away in wagons and used in the surrounding country, but some is loaded on cars and shipped over the Mo. P. R. R.

Josiah Short is operating a mine west of Minden. Mine entered by a slope and ventilated by a furnace. Thickness of coal and mode of working are the same as that of other mines in that vicinity, and price paid for mining the same. The coal is hauled away in wagons, loaded on cars and shipped over the K. C., Ft. S. & M. R. R.

There is a large amount of coal taken out in the surroundings of Minden by stripping, as the covering is too shallow for underground mining. The coal will average nearly three feet in thickness, and is of very fine quality for both steam and domestic purposes.

Pittsburg, Kansas, Postoffice.

Wear Coal Co., Archie Kirkwood, manager; Chas. Duncan, superintendent; James Turner, foreman. Mine located at Vernon Station. This is a mining camp situated about two miles northwest of Minden, on the line of the Kansas City, Fort Scott & Memphis Railroad, and about a mile from the Kansas line. It consists of about 75 good houses for the miners to live in—most of them having three and some four rooms; also, a supply store, express and a postoffice; the camp is located in a very fine country. Shaft 47 feet deep, equipped with very good machinery. Ventilation is secured by a 10-foot fan, running at a speed of 110 revolutions per minute and passing a large volume of air in same time, but the airways being small and contracted considerable of the current was found returning to the up-cast before reaching the working faces. I made a careful inspection of this mine on the 14th of November, 1900, and found the ventilation better than on my former visit. I discovered that a new air shaft had been sunk on the 4th north entry on the east side, and was used as a down-cast which added greatly to the volume of air, and made it stronger and fresher. I also found that another air shaft had been sunk on the 5th north off of west side which was also used as a down-cast, thus making the air better all over the mine except in the straight west entry where I found the air deficient in quantity as well as in quality at this date. On the 6th of June, 1901, I visited the mine again and found it satisfactory at every point, and the mine otherwise in a very fair condition. The covering over the coal being shallow, caves and falls occur here during the spring and wet seasons, letting a large quantity of water into the mine, which does considerable damage by blocking up the passage along the airways; but the water is easily handled by pumps, and the roads are kept comfortably dry. The management is doing everything in its power to operate the mine in full compliance with the requirements of the mining law. I made another thorough inspection on the 18th of October, 1901, and found the ventilation satisfactory and the mine otherwise in very fair condition. I discovered on this visit that the first four cross entries on the north and south on each side of the shaft had been worked out and abandoned, and the work confined at this date to the 5th, 6th, 7th north, and 5th, 6th, 7th south cross entries on each side of the shaft, and that the ventilative volume of air was conducted first to these entries and direct to the men, thus making the air

stronger and fresher. About 100 men employed. Coal 3 feet thick, and worked on the double entry room and pillar plan, paying 65 cents per ton for mining.

The Wear Coal Company is now operating another large mine in this county, which is equipped with all the modern improvements and has one of the most practically constructed plants in the State. It is known as Mine No. 10, and operated under the same management as the other mines of this company. Jno. Kirkwood, foreman. It is located one mile west of Minden, and has shipping connection with the Mo. P. R. R. by a spur switch extending from the main track to the mine. The shaft is 40 feet deep and the hoisting is done by a pair of Litchfield engines, with twin cylinders 16x30 inches, connected direct to a 4-foot drum with steam break, working on first motion. Steam is supplied by two boilers of the O'Leary Durie type, 18 feet long and 60 inches in diameter, containing 44 4-inch tubes in each, and all built on solid rock foundation. The engine and boilers are under the same roof. A commodious and convenient building 52 feet by 64 feet. Each compartment is divided by proper partitions, the engine room is 24 feet by 24 feet, being entirely separated from the boiler room. The head gear is 54 feet high from the ground to the pulley wheels, and 32 feet from the top of rail to the landing, and the head house is 28 feet wide by 50 feet long. The coal is discharged from a self dumping cage to a hopper, and weighed in a hopper scale, after which it is delivered to a shaker screen, which screen grades the coal into three different grades or sizes, and different tracks are provided for each grade. The shaker screen is constructed from the latest pattern, works on a pendulum motion on an elevation of about 18 degrees, and is operated by an independent engine of 10 horse-power. The tippie rests on the head gear posts, and the screening arrangements rests on a solid rock foundation. The weigh-house and automatic appliances for the speedy, convenient and economical weighing and handling of a large tonnage of coal, are models of neatness and usefulness. A blacksmithshop is also provided for at this mine 24 feet wide by 40 feet long, equipped with steam drill press, cutter, power punch, forges and all tools necessary to make new and repair pit cars and to do all necessary work to keep up the repairs about the mine. Both shafts were sunk at the same time. The hoisting shaft is 8 feet wide by 15½ feet long, clear of timber, curbed by 4-inch thick lumber and partitioned into cageways. The escapement or fan shaft is located 80 feet northeast of hoisting shaft and is divided into two compartments, one of which for the air passage proper is 6x8 feet, and a stairway is constructed in the other. Besides this escape shaft, the mine has two other manway shafts, one 900 feet east of the hoisting shaft and one the

same distance on the west side, and a commodious stairway with 7 landings built at each. The fan is set back 20 feet from the air shaft and connected by a tunnel extending from the fan to the air shaft, and trap doors are placed over shaft so that in case of a windy shot or an explosion these doors or shutters will be blown off without injuring the fan and could be readily replaced so that the ventilating current can be quickly restored to the mine. The fan is 14 feet in diameter and operated by a 10x12-inch cylinder horizontal engine connected direct to the fan shaft. The fan house and casings are so arranged and constructed as to allow the fan to force or exhaust as the requirements of the mine may be. The mine is operated on the double entry room and pillar plan, and at a short distance from the bottom of the air shaft an over-cast is erected over the main entry, thereby making it possible to ventilate each quarter of the mine with a fresh current of air, or in other words, the ventilative volume is divided into four distinct and separate currents. At date of inspection I noticed, judging from the plan on which the mine had been started, that all entries and air-courses are so constructed that in the event that it should become necessary to ventilate either pair of cross entries separately it can readily be done. The mine as planned, equipped and operated, together with the push, energy, wise and practical supervision which its ample provisions demand, and receive, it will soon become a great factor in the coal production of Barton county. I made a thorough inspection of the mine on the 18th of October and found everything very satisfactory. The airways are high, wide and clean, leaving plenty of area for a large volume of air to pass through them at a moderate speed. I also noticed the pit bottom had been well secured by the use of large substantial timbers well lined, practically set and about 8 feet high near the shaft. Double track was laid on the east for about 200 feet from the shaft bottom, and some distance on the west side, and it is the intention of the company to extend the double parting further, so that one driver can pass in with his trip without coming in contact with the other driver with his trip coming in the opposite direction; the avoidance of such delays, it will readily be seen, will largely increase the output of the mine. The sinking of shaft, building of switch, and construction of the equipment was begun in March, 1901, and at the close of the year December 31st, the mine had an output of 500 tons per day and increasing daily as the development progresses, and by the time this report reaches its readers, judging by its present advances, the mine will be producing one thousand tons of coal per day.

The company has built 42 houses on the west side of Minden, a distance of about $\frac{3}{4}$ of a mile from the mine for the accommodation and home of the miner. The houses are all new, containing 2, 3 and 4

rooms. Fifteen of these house are built on the cottage plan and have three rooms to the house, which are ceiled. Fifteen have been built square, have 4 rooms to the house, which are all plastered and well finished, and 12 are 2-room houses to suit small families, these are also plastered and put up in good shape. All the houses are painted in light color with doors and casings paneled off with very neat and suitable trimmings, making the appearance bright and cheerful. From a sense of appreciation for the very decided improvements made lately by large coal companies throughout the State in the opening of new mines, there is nothing more deserving of praise and commendation than the neat commodious houses built for the home of the miners. Your Inspector having spent 60 years of his life in the mines, and lived the life of a miner for the same length of time naturally enjoys a real pleasure when he discovers large coal companies like the Wear Coal Company evidencing as it does such kind consideration for the feelings, comfort and happiness of the miner as is substantially attested by the neat homes, the accommodation and conveniences that have been furnished the miners by this and other companies in this State during the past year. Comparing the neatness and home like appearance of the houses now constructed for the home of the miner with those furnished them a few years back, we congratulate the miners on the vastly changed conditions for their comfort in this respect.

BATES COUNTY.

(Production, 372,218 tons.)

Bates county ranks fourth on the list of the coal producing counties, with an output of 372,218 tons of coal for the year just closed. The above amount is the product of 33 mines, employing on an average of 571 men and boys in and around the mines. The average price received at the mines per ton for coal was \$1.04, and the total proceeds from the sale of the product amounts to \$386,560. Powder during the year cost the miners \$33,448, there having been 17,363 kegs consumed. The product is shipped to market over the Mo. P. R. R. Following is a description of the more important mines and their condition at dates of inspection:

Foster Post Office.

The coal in the surroundings of Foster is like that at Amsterdam, Amoret and Worland, about 3 feet in thickness, with very shallow covering, making underground mining impractical as well as unprofitable, and a large amount of coal is taken out here from strip pits, hauled from the mines in wagons, loaded on cars and shipped over the Missouri Pacific

railroad. All information concerning these mines will be found in the statistical table.

W. H. Mace operates the Darby Hill mine, located about two miles west of Foster. Mine entered by a slope and ventilated by a furnace. Coal 3 feet thick and worked on the room and pillar plan. Employment is given to 10 men. Coal hauled over a tram road to Rucker switch, loaded on cars and shipped over the Mo. P. R. R.

There are other mines operated in this locality on a small scale during winter season. These mines have drift openings entered from the bottom of strip pits after the covering gets too thick to strip.

Hume Post Office.

There are a large number of strip pits operated in the surroundings of Hume and the coal is shipped to market over the P. & G. R. R. Coal about 3 feet thick and of very good quality; it finds a ready market wherever once used.

Rich Hill Post Office.

Thos. Ingles operates a mine at Rich Hill in the fall and winter for local consumption.

Vernon Coal Co. I. M. Wise, Superintendent; Sid Haynes, Foreman. Mine located two miles south of Rich Hill, and has shipping connection with the Missouri Pacific railroad by a spur switch extending from the main track. Shaft 108 feet deep; equipped with very good machinery for hoisting. I visited the mine on the 13th of November, 1900, and found the ventilation very weak on the east side and mixed with black damp and impure air, which was coming from the old abandoned slope where a connection had previously been made. The ventilation at this date was furnished by a fan, and the same was set on the top of the air chamber, which was partitioned off at one end of hoisting shaft, and instructions were given to the company to sink an escapement shaft at once. I made another inspection on the 5th of June and found the mine in good condition. I discovered that the escapement shaft had been sunk and the fan removed and a stairway erected. The ventilation was up to the requirements of the law and fully satisfactory on this visit. I made another inspection on the 14th of October, 1901, and found the ventilation and general condition of the mine very satisfactory. Coal about 42 inches thick and worked on the double entry room and pillar plan. Employment is given to about 60 men, and 60 cents per ton is paid for mining unscreened coal.

David Rees is operating the old slope near Gulf No. 5 and shipping

the coal over the Mo. P. R. R. The mine is practically worked out, but few stumps and pillars left which are now about all taken out and the mine abandoned.

W. H. Lowder operates a mine 4 miles north of Rich Hill and has shipping connection with the Mo. P. R. R. by a spur switch. Mine entered by a slope and ventilated by a furnace, giving very fair results. Coal four feet thick and worked on the double entry room and pillar plan. From 6 to 12 men employed.

Denayer Bros. are operating a mine north of Rich Hill. Mine entered by a slope. Coal 4 feet thick and worked on the room and pillar plan. From 4 to 7 men employed.

N. Bellier operates a mine north of Rich Hill and ships the product over the Mo. P. R. R. Thickness of coal and mode of mining is the same at this mine as that of the last mentioned. These are mines that have been reopened in order to work out stumps and pillars left in when the mines were abandoned.

Robert Pearson. Mine located 4 miles north of Rich Hill, and has shipping connections with the Missouri Pacific railway by a spur switch. Mine entered by a slope and ventilated by a furnace with very fair results. I made the first inspection of this mine on the 13th of November, 1900, and found it in a healthy condition, with the ventilation satisfactory. On the 4th of June, 1901, I visited the mine again and found that considerable more work had been opened out since my last visit and discovered the air weak at the face of the workings. This mine having been driven along side of a mine which had been worked out and abandoned, the miners would occasionally strike through a pillar and into the old works, when this was the case the foul air from the old mine would enter and vitiate the air, and as the furnace was small and inadequate to contend with conditions like this without causing discomfort to the miners, we advised Mr. Pearson to replace the furnace with a fan.

On the 15th of October I visited the mine again and found its condition fully satisfactory. I discovered that portion of the mine where the air was foul and deficient on a former visit had been abandoned, thus making the ventilative current stronger and fresher. Coal 4 feet thick and worked on the room and pillar plan. About 40 men employed. Product shipped over the Mo. P. R. R.

Rich Hill Coal & Mining Co. R. M. McDowell, General Manager; W. B. Williams, General Superintendent. This company owns and is operating several mines in the surroundings of Rich Hill, all of which have shipping connection with the Missouri Pacific railway.

Mine No. 15. William Gresham, Foreman. Mine located one and one-half miles south of Rich Hill, and has shipping connections with the

Mo. P. R. R. by a spur switch extending from the main track. Shaft 106 feet deep; equipped with first class machinery for hoisting. Ventilation is furnished by a 15-foot fan, running at a speed of about 80 revolutions per minute and removing enough air to ventilate the mine satisfactory. This is the largest producer and the most practically operated mine in the State. I made four inspections of this mine since my last report and on every visit found the ventilation above the requirements of the law—the mine in good sanitary condition, and the safety of the employes well guarded. I made the first inspection on the 13th of November, 1900, and found the mine in good condition. A new air shaft had been sunk on the south side and was used as a down cast.

The air is now coming down through the new air shaft and travels to the face of the south entry, where it is divided to the east and west sides, the current from the west side returning to up cast over an air crossing. The route of the air is thus shortened about 4,000 feet, and the current is directed straight from the down cast to the face of the workings, making it stronger and fresher, and very satisfactory. All the work on the north side is branched off from the straight east, and another air shaft has been sunk at its terminus, which is also used as a down cast, and permits the ventilative volume of air to go direct from the bottom of the air shaft to working places of the miners in a very satisfactory manner, making 3 separate currents of air on each side of the shaft. At date of my next visit in March, 1901, I found the ventilation satisfactory and the mine in excellent condition. An electric motor had been put in to haul the coal out on the north side and an electric pump was put inside the mine to pump out the water, which was movable and could be taken from one place to another as the requirements of the mine demanded. A bore hole was put down to discharge the water and connection could easily be made with the pump at every pump hole, and in this manner the roadways were constantly dry. I made another inspection on the 5th of June, 1901, and found the ventilation, as well as the general condition of the mine, fully satisfactory.

I made my fourth visit on the 15th of October, 1901, and found every requirement of the mining law referring to the management of mines fully complied with, and the mine in excellent condition. Another electric motor has been added to the equipment of this mine to haul out the product. Coal 4 feet thick and worked on the double entry room and pillar plan; 55 cents per ton is paid for mining mine run coal. From 250 to 275 men and boys employed. Product shipped to market over Missouri Pacific railroad.

Mine No. 20. Jas. Price, Foreman. Mine located 6 miles northwest of Rich Hill and has shipping connections with the Mo. P. R. R. Water

broke into this mine during the heavy rains in the fall of 1900 and filled it up. The mine being nearly worked out the company decided to abandon it, and commenced to open another mine a half a mile west called mine No. 22, but as the coal proved low and faulty it was also abandoned after getting out what coal was workable.

BOONE COUNTY.

(Production, 21,549 tons.)

Boone county is nearly all underlaid by the coal measure formation, and mining operation are carried on in a small way in different parts of the county. The same seam of coal underlies this county as that so extensively worked in Macon and Randolph counties, and the vein can be found in every township in the county, but the output of the mines is limited to the local demand. Following is a description of some of the larger mines:

Columbia Post Office.

Blackfoot Coal Co. Jas. Hubbard, Foreman. Mine located 5 miles northwest of Columbia on the gravel road. Shaft 120 feet deep; operated by horse power. Ventilation is furnished by a furnace with very fair results. The communication between the two shafts was found so obstructed as to be impassible to go through in case of accident to hoisting shaft, and instructions were given to the company to have same cleaned.

The coal is forty-four inches thick and worked on the room and pillar plan. This could be made an extensive mine if it had railroad connection to ship the product to other markets, but being located 5 miles from a railroad, its output is limited and confined to local demand. Employment is given to about 15 men in winter and 5 in summer. The coal is hauled away in wagons to Columbia, where it is consumed.

The Carter Bros. Coal Co. This mine is located four and one-half miles northwest of Columbia, and is entered through a vertical shaft 85 feet deep, which is equipped with horse power apparatus for hoisting. Ventilation is furnished by the aid of a furnace with poor results. I visited the mine on the 4th of October, 1900, and found the air deficient owing to the airways being choked up and I ordered the same cleaned out and made larger at once. On my next visit to the mine I found it closed down and abandoned.

Prayther & Co. are operating a mine near the Carter mine. It is entered by a slope and ventilated by a small furnace. Coal 40 inches thick and worked on the room and pillar plan; 14 men employed in winter and 5 in summer; product consumed at Columbia.

Columbia Coal Co. R. E. Henry, Manager. Mine located at Henry station, and has shipping connection with the Columbia branch of the Wabash R. R. Shaft 112 feet deep, and operated by steam power. Ventilation is furnished by a furnace which was giving very fair results at dates of inspection. I visited the mine on the 4th of October, 1900, and discovered that a new air-course had been made on the north side, which greatly improved the ventilation; the system of working had been changed from the longwall to the room and pillar plan, and the mine was found at this date in a very fair condition; two more inspections were made during the year with satisfactory results. Coal 40 inches thick and worked on the room and pillar plan; 75 cents per ton is paid for mining. From 12 to 15 men employed; the product is consumed at the water-works at Columbia.

S. D. Gordon. Mine located one mile east of Columbia. Shaft 55 feet deep; hoisting by horse power. Ventilation is secured by the aid of a furnace with very fair results. Coal is hauled away from the mine in wagons to Columbia, where it is consumed mostly to supply the water-works. The seam is about 30 inches thick and is worked on the room and pillar plan. Employment is given to 10 men in winter and 5 in summer; pay for mining, 75 cents per ton. The mine is now abandoned.

I. Gray operates a drift mine, near the Carter mine, during the fall and winter to supply local demand.

Wm. Prather operates a mine northwest of Columbia during the winter season to supply home trade. Mine is entered by a drift and the coal worked on the room and pillar plan. It is hauled away from the mine in wagons and consumed at Columbia.

Harrisburg Post Office.

A large amount of coal is taken out every year in the surroundings of Harrisburg. In fact the country is all underlaid with a 4-foot seam of coal and every farmer in that locality who has a low ravine or a creek running through his farm, has also a coal mine. The coal crops out at all low places and the farmers get their coal by stripping it until the cover gets too thick, when a drift is driven under the hill, and in this way a large amount of coal is mined every fall and winter. The coal seam running through this place is a continuation of the seam that is so extensively mined in Randolph county, and productive mines could be profitably operated here if it had railroad connection to ship the product to market, but located as it is, about 12 miles from a railroad, the output of coal in this neighborhood will be very small indeed until better facilities is offered to take it to other markets. The names and output of every mine, with other information, will be found in the statistical table of this county.

Rucker Post Office.

H. T. Buckler operates a mine at Rucker in the fall and winter to supply home demand. The mine is entered by a drift and ventilated by a furnace. Coal 4 feet thick and worked on the room and pillar plan. Employment is given to 6 men in winter, and the coal is consumed in the surrounding country.

I. H. White is operating a mine in same locality. Mine entered by a drift. Ventilated by a small furnace, and worked on the room and pillar plan. Coal consumed in the surrounding vicinity.

The country in the vicinity of Rucker is all underlaid with coal. The seam is about four feet thick and of good quality for both steam and domestic purposes and extensive mines could be operated if there were better shipping facilities to take the coal to market; but the black diamond will have to remain in its present abode until the capitalist see fit to build a railroad to the coal belt and develop it.

CALDWELL COUNTY.

(Production, 19,021 tons.)

Caldwell county stands eighteenth in rank in the production of coal in this report and has the distinction of being the deepest mine in the State. Since the last report was issued 19,021 tons of coal were produced and sold for \$34,515, or an average of \$1.81 per ton. Two mines are now operated in the county, and the location and condition of each is as follows:

Hamilton Post Office.

Caldwell Coal Co. E. B. Hayden, President; Wm. Toney, Foreman. Mine located two miles east of Hamilton, and has shipping connection with the Hannibal & St. Joe R. R. by a switch. Shaft 507 feet deep; operated by machinery for hoisting. The ventilation is furnished by a 10-foot fan, and the ventilative volume is divided into four separate currents, two currents on each side of the shaft. I made a careful inspection of this mine on the 25th of September, 1900, and found it in a very fair condition. The ventilation was satisfactory and the safety appliances were found in a safe condition and in good repair. The communication to the escape shaft was found also in good order, high, wide and clean.

On the 30th of April, 1901, I made another careful examination of the mine and found the ventilation on the south side in a satisfactory condition, but deficiency in the air was found on the second south entry off first east on the north side. In fact the air-course was entirely choked up

and no air was passing and instruction was given to the management to have them cleaned at once. With this exception the general condition of the mine was very fair. I visited this mine again on the 4th day of November, 1901, and found it idle, the men having some trouble and were on strike, hence no inspection was made. I returned again on the 2nd of December, 1901, and found that the strike was still on, but discovered that about 30 men were at work in the mine. I made a thorough inspection at this date and found it in a worse condition than on former inspection and clearly showed great neglect. The ventilative volume was strong and satisfactory at the points where the few men were working, but I discovered the air entirely cut off at other parts that remained idle and it will require considerable cleaning up to put the mine in a healthy condition. Coal 18 inches thick and worked on the longwall plan. Mining is paid for at the rate of \$1.10 per ton. The coal is of extra good quality for all purposes, but more especially that of steam. It makes a very hot fire and is noted for its durability. The vein being thin is naturally expensive to operate, and as it comes in contact with the larger seams in the market, it is difficult to operate the mine profitably.

Kingston Post Office.

Dripping Springs Coal Co. A. Bishop, Manager. Mine located one mile north of Kingston and has shipping connection with the Kingston branch. Shaft 248 feet deep, and equipped with good machinery for hoisting. Ventilation is furnished by a steam jet, with very fair results at present, as only a few men work in the mine. I visited it 3 times during the year and found the ventilation and the general condition fully satisfactory. The mine is now operated on the upper vein, which is very irregular and faulty, dwindling down almost to nothing in thickness, which makes it expensive to operate and we expect the company to abandon it in the near future and work the lower vein 130 feet below. The shaft is already sunk to it. John Stewart, Foreman.

CALLAWAY COUNTY.

Callaway county, like Boone, is situated on the eastern margin of the coal formation and coal has been found and mined in nearly every township in the county, but only on a small scale. The same vein is worked here as that so extensively mined in Macon and Randolph counties, but runs low and more irregular than the last named counties and crops out in low places. The principal mine, and the only one in the county having shipping connection is located at Fulton. Following is a description and location of mines operated in this county:

Fulton Post Office.

Wm. Castle operates a mine near Fulton. Mine entered by a drift and ventilated by a furnace. Coal 28 inches thick and worked on the long-wall plan. The product is consumed at Fulton.

Fulton Fire Brick & Mining Co. L. V. Nichols, Manager; I. Harris, Foreman. Mine located two miles south of Fulton and has shipping connection with the Mexico & Cedar City branch of the Chicago & Alton R. R. Shaft 100 feet deep, and operated by steam power. Ventilation is secured by a small fan with very fair results. I made a careful inspection of this mine on the 3rd of October, 1900, and found it in a very rickety condition in the matter of safety. The curbing of the shaft as was contemplated was not satisfactory, as portions of it had not been touched and was found in a dangerous condition. Cages were found without bonnets or catches, and one of the hoisting ropes was in bad condition, and instruction was given to the company to curb the shaft where needed, put covers and catches on cages, and replace the defective rope with a new one at once. On my next visit to the mine I found it idle, and no one around it no inspection could be made. On the 21st of November, 1901, I visited the mine again and found it in a very dangerous condition, the curbing rotten and bulging out into the shaft, preventing the cages from running and the following letter was sent to the company, which explains fully the condition of the mine at this visit, with instructions from this department:

Jefferson City Nov. 25th, 1901.

Fulton Fire Brick Manufacturing and Mining Co., Fulton, Mo.:

Gentlemen—After a careful investigation and inspection of your mine made on the 21st day of this month, I confess to being sorry that my duty compels me to inform you that I found it in an extremely dangerous condition and indeed so much so as to make it unsafe for the passage of men up and down the shaft.

To begin with, the curbing in the shaft is rotten and broken in several places; it is out of alignment and sprung to such an extent as to cause the cages to rub nearly all the way from top to bottom. The astonishing thing to me is—that you do not appear to appreciate the calamity you are inviting by your indifference to a condition of things that must be apparent to the most superficial observer. The extraction of the material in your clay mine, which underlies your coal, has already caused a movement of the superincumbent material plainly to be seen to the very surface of the ground, causing a squeeze so pronounced that your shaft is thrown in a twist and your pit-head made to settle. I noticed also during this same

inspection, that you are now at work in the clay mine, reopening one of the entries and taking out timber. This, in my judgment, will start the squeeze anew, and to add still further to the dangerous condition of things you have started another opening in the clay running toward the railroad and quite close to the shaft. The timber in the bottom and also at both the coal and clay openings in the shaft has already been twisted all out of shape and the least movement of the material is liable to produce a cave-in. *For these reasons I am compelled to order your mine closed until the shaft is made perfectly safe for your employes to pass to and from work.*

The patching of a few places here and there will not warrant that safety required and demanded by existing conditions, and I shall have to insist upon strong timbers and a substantial re-timbering of your shaft from top to bottom at once.

I noticed that there were about 22 men employed in your coal and clay and at the time regarded the conditions as justifying me in closing the mine and ordering the men out and to stay out until the shaft was made safe; now that I have taken time to calmly and duly consider all the interests involved, I feel that I cannot longer reconcile my sense of duty with the thought of delaying the order relative to the closing of your mine.

I also noticed that you have in violation of the law been operating your cages without safety catches. When I call to mind the long experience of your management in mining, realizing the fact that you have the required knowledge of what is demanded and then observe the wilful, and reckless disregard displayed not only with reference to the welfare of your employes, but to the laws of the State as well, I confess that I am astonished and pained. I expect you to at once comply fully with these instructions and oblige,

Yours truly,

CHAS. EVANS,

State Mine Inspector.

In a few days after the receipt of the above letter the company kindly notified this department that they had secured lumber and were working night and day recurbung the shaft in order to make it secure, but we have not been able to visit the mine again up to the present writing. Coal 30 inches thick and worked on the longwall plan. The product is mostly consumed by the company in the manufacture of bricks, locomotive blocks and other articles, but some of the coal is used in the city and surrounding country.

Delphus Holmes operates a mine southwest of Fulton. Shaft 45 feet deep and operated by horse power. Coal 26 inches thick and worked on the longwall plan. The product is taken away in wagons and consumed at Fulton and vicinity.

James Smith is operating a mine southeast of Fulton across the creek. Mine entered by a drift and ventilated by a furnace. Coal 30 inches thick and worked on the longwall plan. Mining is paid for at the rate of \$1 per ton, and from 8 to 10 men employed. Coal consumed at Fulton.

R. Thorpe is operating a drift mine near Fulton and the coal consumed in the vicinity.

John Harris operates a mine southeast of Fulton on the Jefferson City road. Shaft 40 feet deep, and operated by horse power. Ventilation is furnished by a furnace with very fair results. Coal 30 inches thick and worked on the longwall plan. This is the most extensive mine in this locality; employment is given to 20 men in winter. The coal is taken away from the mine in wagons and consumed at Fulton and vicinity, most of which is used at the State institutions.

Chris Lambis is operating a drift mine on Ed Curd's land. Mine only worked during the winter to supply home demand.

Woods & White operates a mine in the same locality. Mine entered by a slope and ventilated by a small furnace. Coal 30 inches thick and worked on the longwall plan; from 4 to 6 men employed.

John Marsenkoff operates a mine on the Curd land. Shaft 25 feet deep, and hoisting by horse power. Thickness of coal and mode of working the same as at other mines. Mine only operated in winter and the coal used in the neighborhood.

Jas Simmons is operating a mine on the Powells land, and the product is consumed in the surrounding country.

I. Bishop operates a mine near Fulton during the winter season. Mine entered by a drift. Coal 30 inches thick. The product is consumed in the immediate vicinity.

There are several other mines operated at various points throughout the county during the cold weather to supply home demand, which we did not have the time or opportunity to visit, and as they are only employing from 2 to 4 men they don't come under the provisions of the law for inspection.

CARROLL COUNTY.

(Production, 1,430 tons.)

Very little mining has thus far been carried on in Carroll county, notwithstanding the entire county is underlaid by the coal measure formation. The mines which are operated in this county are on a small scale to supply home trade. The top seam is mined here, which is only about 18 inches in thickness and quite a number of the mines are strip pits.

The names of all these parties, with other information, will be found in the statistical table of this county.

CASS COUNTY.

Creighton Coal Co. Geo. Meidinger, Manager. Mine located at Creighton. A tram road is built from the mine to the railroad a distance of half a mile, thus making shipping connections with the K. C., Ft. Scott & Memphis R. R. Shaft 156 feet deep and operated by steam power. I visited the mine on the 13th of December, 1900, and found it idle in obedience to the instruction of the mine inspector. Demand was made of the company to comply with the law that provides for escape shafts to be sunk as an avenue of escape for the employes in case of a fire or any other accident to hoisting shaft. The mine has been in operation for six years and every effort has been made by the inspector to get the company to comply with the law but failed and was compelled to order the mine closed until an escape shaft is sunk. It is as strange as it is true that while the law providing for escape shafts is one of the best laws on the statute books and yet when the inspector in the execution of his official duties, attempts to get mine operators to comply with this law, he finds the miners who are the direct beneficiaries of the law taking sides with the operators and opposing the inspector in his honest efforts to secure their greatest safety. When I ordered this mine closed after all efforts failed to get the company to sink the escapement shaft, the employes of the mine sent several petitions to the inspector and one to the Governor asking permission to operate the mine without an escape shaft, and in direct violation of our laws. Miners should be consistent and take advantage of every benefit our laws give them, as there never will be too many safeguards thrown around the miner in his dangerous work.

CEDAR COUNTY.

(Production, 1,730 tons.)

There are several parties operating mines in the vicinity of Jerico, El Dorado Springs, LeBeck and at other parts of the county. The coal is found in local deposits in the hills, and the mines are entered by drifts and slopes. The coal is about 24 inches in thickness and worked on the room and pillar plan. The product of the mines is carried away in wagons and consumed in the neighborhood.

Jerico Post Office.

A. S. Miner sunk a shaft on his land last summer and struck coal at a depth of 22 feet, and is operating the mine by horse power for hoisting. Mine only worked in winter.

G. M. Poage operates a drift mine during the winter to supply home trade.

I. C. Duncan is operating the same mine that he did last year, and the coal consumed at home.

Howard & Lunchford operate a mine near Jerico in the fall and winter to supply home consumption.

W. Packerd, A. C. Davis and David Barik are operating mines in the neighborhood of Jerico, and the product is consumed in the vicinity.

The coal taken out in the surroundings of LeBeck and El Dorado Springs is obtained by stripping and consumed in the immediate vicinity.

CHARITON COUNTY.

(Production, 1,447 tons.)

While the whole of Chariton county is underlaid by the coal measure formation, yet, like Carroll, the adjoining county, very little mining is carried on. The mines that have been operated during the past year are only worked upon a very small scale to supply local demand during the winter season.

The mines producing the most coal are located near Keytesville and Salisbury and are operated by F. P. Buffington and Henry Wachter, respectively. The coal at Salisbury is 42 inches in thickness, while at Keytesville, Guthridge Mills, Indian Grove and Newcomer, it is only about 18 inches.

CLAY COUNTY.

(Production, 16,681 tons.)

Missouri City Coal Co. H. Jones, Manager; Wm. Main, Foreman. Mine located at Missouri City, and has shipping connection with the Wabash R. R. by a switch. Shaft 165 feet deep and equipped with very fair machinery for hoisting. Ventilation is produced by a 10-foot fan with excellent results. I visited the mine in October, 1900, and learned that Mr. Harrison Jones had bought the mine and was making preparations to commence operation, and had already made considerable changes on the pit top. I made an inspection of the inside workings and discovered that a new door had been set on the north entry, which was turning the air and conducting it around the work very satisfactory. On the 29th of March I visited the mine again and made another inspection and found it in a very fair condition, with the ventilation fully up to the requirements of the law. I discovered on this visit that too much dirt was thrown into the air-course on the east side and ordered it cleaned. Instruction was

also given to the company to examine and repair stairway in escape shaft and connect a hose to the pump ready in case of fire at pit top or engine house. I made another inspection on the 14th of September and found that the air-course on the east side had been cleaned and enlarged, leaving plenty of area for the air to travel and all other instructions given at a former visit had been complied with. Coal 20 inches thick and worked on the longwall plan. The coal is taken to Kansas City. Employment is given to 40 men.

DADE COUNTY.

(Production, 5,393 tons.)

Mining has been carried on in Dade county for a great number of years, but only on a limited scale to supply the home demand. The coal measures of this county occur only in the northwestern corner, where they are confined almost exclusively to one or two townships. The coal is found in local deposits in the hill tops and ridges, and the mines are entered by drifts. It will average about 30 inches in thickness and is of excellent quality. The mines are located 12 miles distant from a railroad and the coal is taken away in wagons and consumed in the surrounding country.

Sylvania Post Office.

Finney & Simmons operate a mine on the land of McElhany during the winter season to supply home trade.

O. Ramsey is operating a mine on the land of Rob't McClvey. Mine entered by a drift. Coal 30 inches thick and worked on the room and pillar plan.

Thos. Gardner operates a mine on the McCombs land. Drift opening and ventilated by a small furnace. Coal consumed in the locality.

Leonard & Hendricks are operating on the land of J. Johnson. There are several others operating in this neighborhood, and their names, with other information concerning same will be found in the statistical table of Dade county.

GRUNDY COUNTY.

(Production, 42,361 tons.)

Grundy County Coal Co. Rob't Aladise, Superintendent. Mine located one mile south of Trenton and has shipping connection with the Chicago, Rock Island & Pacific railroad by a switch extending from the main track. Shaft 170 feet deep and operated by first class machinery.

The ventilation is furnished by a 10-foot fan with satisfactory results. I made a careful inspection of this mine on the 30th of November, 1900, and found it in excellent condition, with the ventilation good all over the mine and its general condition very satisfactory.

I visited the mine on the 12th of April, 1901, and found it in a satisfactory condition, with the ventilation good and all the safety appliance in a safe and good working order. The communication between the hoisting and escapement shafts was found high, wide and clean and in good condition, and the mine found safe and healthy. On the 30th of August, 1901, I made another careful inspection and found everything satisfactory, with the mine safe and healthy. Indeed the condition of this mine seems to be improving on every visit I make. Coal 18 inches thick and worked on the longwall plan. Employment is given to 150 men, and \$1.15 per ton is paid for mining. The product is mostly consumed by the Chicago, R. I. & P. R. R., but a large amount is sold for home consumption.

HENRY COUNTY.

(Production, 103,267 tons.)

The entire county of Henry is underlaid with the coal measure formation, and coal is mined in all sections of the county, but a very large number of the mines are worked on a small scale, and only operated during the winter months to supply the home demand. There are reports from 29 mines represented in the statistical table from this county.

These 29 mines produced 103,267 tons of coal since the last report, which was sold at an average of \$1.50 per ton at the mine with a total valuation of \$154,385. In producing this amount of coal an average of 309 men were employed. Following is a description of some of the mines:

Brownington Post Office.

Cooper Creek Coal Co. Mine located half way between Brownington and Deepwater and has shipping connection with the Frisco R. R. by a spur switch. Shaft 20 feet deep and operated by horse power. Ventilation is produced by a furnace, with very good results. Coal 3 feet thick and worked on the room and pillar plan. The mine being surrounded by strip pits and the covering so shallow it makes a large amount of water, which is thrown out by an elevator pump. Employment is given to 30 men. The coal is of very good quality and is consumed at local towns along the line of the road.

John Thompson & Co. Mine located between Brownington and Deepwater, and has shipping connection with the Frisco R. R. by a spur

switch. Shaft 58 feet deep, using steam power for hoisting. Ventilation is secured by a small fan which is set on the top of the hoisting shaft, exhausting through an air chamber partitioned off at one end of the shaft, with satisfactory results.

This mine makes a very large amount of water, being surrounded by strip pits. Coal 3 feet thick and worked on the room and pillar plan. Mining is paid for at the rate of 90 cents per ton for forked coal. From 30 to 35 men employed.

Clinton Post Office.

Jordan Coal & Coke Co. M. Sheldon, Manager. Mine located two miles south of North Station and has shipping connection with the Clinton branch of the K. C., Ft. S. & M. R. R. Shaft 30 feet deep and operated by horse power. This is a new mine opened during the past year, and at dates of inspection found 12, and 6 men, respectively, at work. Ventilation is furnished by a small furnace, and the mine being new, was giving satisfactory results. Coal 32 inches thick and worked on the room and pillar plan. Ninety cents per ton is paid for mining. Coal consumed at local towns along the line of road.

Jas. Dameron operates a mine southeast of Clinton during winter season to supply home trade.

Wm. England is operating a mine near Clinton to supply home consumption.

Watkins mine is located 3 miles southeast of Clinton. Shaft 35 feet deep and operated by horse power. Ventilation is produced by a small furnace, with very fair results. Coal 24 inches thick and worked on the room and pillar plan. Ninety cents per ton is paid for mining, and from 5 to 8 men employed. The coal is taken away in wagons and consumed at Clinton.

Dailey & Sons. Mine located 3 miles south of Clinton. Shaft 25 feet deep; operated by horse power. The mine is worked on the room and pillar plan, and ventilated by a small furnace. The coal is taken away in wagons and consumed at Clinton.

I. W. Watson is operating the Owen mine and the product is consumed at Clinton and vicinity.

Deepwater Post Office.

Densler & Hurst operate a mine south of Deepwater on the other side of Cooper creek. Mine entered by a slope, and ventilated by a furnace. Coal 3 feet thick and worked on the room and pillar plan. Coal taken away in wagons, loaded on cars at Eaton switch and shipped over the Clinton branch of the K. C., Ft. S. & M. R. R.

Hurst & Sheldon. Mine located between Brownington and Deepwater. Shaft 50 feet deep and operated by horse power. Ventilation is furnished by a furnace. Thickness of coal and mode of working is the same as that of other mines in this locality. This mine has no shipping connection and the coal is taken from the mine in wagons and loaded on cars of the Frisco line and consumed along the road at local towns.

John L. Ingram operates a mine in same locality, and the product consumed in vicinity.

W. S. Dickey Clay Manufacturing & Mining Co.. Mine located at Deepwater. Slope opening and ventilation is furnished by a furnace with good results. I made 3 inspections of the mine during the year and found it in a healthy condition, and the safety appliances in good repair. On my visit on the 7th of June I discovered the coal ahead was going to the dip, making it expensive to haul it out, and the company contemplated sinking a shaft in the basin of the dip to save the expense of hauling up hill. On the 21st of October I visited this mine again and observed that a shaft had been sunk and equipped with machinery for hoisting, but no underground connection made. Coal 3 feet thick. The product is all consumed by the manufacturing company. Sam Smith, Superintendent.

Wm. Rees, Jr., operates a mine 4 miles southeast of Deepwater, and has shipping connection with the Frisco railroad by a spur switch. Shaft 42 feet deep; hoisting by horse power. The mine is ventilated by a furnace, which was giving good results. Coal 34 inches thick and worked on the room and pillar plan. The coal is overlaid by a slate roof easily secured by timber. The mine is practically dry and in good condition; \$1.00 per ton is paid for mining in winter and 90 cents in summer. Employment is given to about 20 men. The product is consumed at local towns along the line of road.

Wm. Rees, Sr., is operating a mine in the same locality to supply home trade. Thickness of coal and mode of working is the same as that of other mines in that neighborhood.

The Meranda mine is now operated by I. Hurst. Shaft 35 feet deep and operated by horse power. Ventilation is furnished by a small furnace. Coal 3 feet thick and worked on the room and pillar plan. Eight men employed in winter to supply home trade.

Smith Coal Co. Mine located in the brush and work the same seam of coal and on the same method as that of other mines in this locality.

Wm. Rusk is operating a mine in the brush on the same seam and under same conditions as the above mentioned mines. Employing a few men in winter to supply home trade.

There are several other parties stripping coal in the surroundings of Deepwater, and the product is consumed in the surrounding country.

Lewis Station Post Office.

Co-Operative Coal Co. Mine located at Lewis Station and has shipping connection with the M., K. & T. R. R. by a spur switch, extending from the main track. Shaft 75 feet deep and operated by machinery for hoisting. The ventilation is furnished by a 10-foot fan with excellent results, and the mine was found very well provided with good air at both inspections. The present operator since he took charge of the mine has made great improvements. Airways have been cleaned, new doors set, and new roadways made, and the general condition of the mine is good. Coal 30 inches thick, and worked on the longwall plan. Eighty cents per ton is paid for mining in winter and 70 cents during summer months and from 30 to 40 men employed. The product is taken to Sedalia and other towns along the railroad, where it is consumed.

D. P. Pigg Coal Co. Mine located one and one-half miles northeast of Lewis Station, half a mile north of railroad. Drift opening and the ventilation secured by the aid of a furnace. The ventilative current enters the mine through one drift, circulates around the workings and returns along the other drift to the furnace, where it ascends after finishing its work with results entirely satisfactory. The mine was reopened during the past year, after laying idle for several years. A new tramroad was built from the mine to the railroad to secure shipping connection over the M., K. & T. R. R. Coal 30 inches thick and worked on the longwall plan. Eighty cents per ton is paid for mining in winter and 70 cents in summer. Employment is given to 30 men. The product is taken to Sedalia.

Tebo Coal Co. John Bowen, Superintendent. Mine located at Lewis Station and has shipping connection with the M., K. & T. R. R. by a switch. Shaft 35 feet deep and equipped with machinery for hoisting. The ventilation is furnished by a furnace and the mine is well ventilated. This is a new mine sunk and opened out in the fall of 1900, and at date of my second inspection, on the 8th of June, 1901, had 40 men employed. I made another inspection of this mine on the 22nd of October, 1901, and found it in good condition. Thirty men employed, paying 80 and 70 cents for mining alternatively in winter and summer. The product is consumed by the railroad company on their engines, chutes being erected at the mine to coal trains.

There are parties operating mines and taking out coal during the cold season at Appleton City, Montrose, Garland, Calhoun, Piper and Sparrow, and the names of all those parties, with other information concerning same will be found in the statistical table of this county.

Windsor Post Office.

C. W. Field operates a mine on the Chappel land located two miles north of Windsor. Coal $3\frac{1}{2}$ feet thick and is obtained by stripping. It is taken away in wagons and consumed in the surrounding country.

W. E. Hughes operates a mine two miles south of Windsor. Mine entered by a vertical shaft and ventilated by a furnace. Coal $4\frac{1}{2}$ feet in thickness and worked on the room and pillar plan. Mine only operated in winter and the product is consumed at home.

L. E. Beaman operates a mine on the Miller land, which is located 6 miles north of Windsor. Shaft 35 feet deep, using horse power for hoisting. Coal 5 feet thick and worked on the room and pillar plan.

This is a local deposit of coal, and we on several occasions in our annual report expressed our opinion that the deposit extended under a large area of the adjoining country and during the past few months the Tebo Coal company prospected the land fully and discovered that it extends 2,300 yards in length and 550 yards in width and will run from $4\frac{1}{2}$ to 5 feet in thickness, and the above named coal company intends having a switch built out and work the coal.

The Hines mine is located in the same locality as the Miller mine and working the same coal deposit. The coal is of good quality, overlaid by hard slate roof, easily secured by timbering. In fact very little timber is used. While the covering is shallow and a large amount of coal is being worked out, the mine is practically dry and the roof standing as well now as when the coal was taken out 20 years ago.

HOWARD COUNTY.

(Production, 3,685 tons.)

A very large portion of Howard county is underlaid by a thick coal seam, but located as it is some distance away from the railroads, it is as yet undeveloped, and what mining is done here is on the upper seam, which only measures about 18 inches in thickness. The same vein extends under a portion of this county as that so extensively mined in Randolph county, and productive mines could be operated if convenient to shipping facilities, but the mineral wealth of Howard county must remain undeveloped until the capitalist build an iron road to take the product to market.

Fayette Post Office.

The Elkin mine is operated by W. R. Graham.

The Fayette coal mines are operated by R. L. Jackson.

The Lockridge mine is operated by Jas. Gray.

All these mines have drift openings ventilated by natural current, and worked on the room and pillar plan. The coal is 18 inches thick and is hauled away from the mines in wagons and consumed at Fayette and vicinity.

JACKSON COUNTY.

(Production, 20,000 tons.)

Brush Creek Coal Co. H. M. Holden, Manager; Jas. Dunkbery, Foreman. Mine located two miles southeast of the city limits of Kansas City, and has shipping connection with the Belt R. R. by a spur switch. Shaft 460 feet deep. Equipped with good machinery for hoisting. Ventilation is produced in a satisfactory manner by a 10-foot ventilating fan. The ventilative current is practically divided and conducted around the workings, keeping the mine clear of gas and other impurities and furnishing enough air in every part of the mine to keep it in a healthy condition. I made my first visit to this mine on the 7th of August, 1900, and found it idle, and no inspection was made. I returned on the 17th of September and made a thorough inspection and found that all the work at this date was confined to the north side, where I found about 50 men at work. I discovered that the ventilation was good all over the mine. Two tests of the air was taken, one on each side of the shaft at the return, and 21,575 cubic feet per minute found passing. This volume was passing around in 5 separate currents. The mine having been closed down for some time, and just being reopened, I took the safety lamp on this visit and examined every part of the mine in search of gas, but could not find any.

I made another inspection of this mine on the 5th of December, 1900, and found it in a safe and healthy condition, with the ventilation satisfactory. I discovered at this visit that the shaft had been sunk to a lower seam of coal, and that the mine was now working two seams 160 feet apart, but as the lower one was working at night and the upper one during the day and not convenient for me to go down until night, I did not inspect the lower vein on this visit. I visited the mine again on the 11th of March, 1901, and found the ventilation in the upper vein very satisfactory and the mine otherwise in good condition. I examined all places and entries not then working and found them clear of any gas, with a strong current of fresh air sweeping through.

After completing my examination of the upper vein I descended to the lower one, which is 160 feet below, or 460 feet from the surface. The works in the lower vein I discovered to have been recently opened. The coal seems to be of a practically uniform thickness of two feet. It is un-

derlaid by about 12 inches of fire clay mining, and overlaid by what seems to be hard and substantial slate. I noticed at this visit that the main entries had been driven north and south and each was a 100 feet or more from the bottom of the shaft. I discovered each one of the entries named had been driven 12 feet wide and made 7 feet high, and the roof was well secured by heavy timber. Four pillars of coal, each 37x54 feet, were left around the shaft bottom for support to the shaft, and the air-courses on the east and west were extended beyond these pillars, and the circle had been cut around. I also discovered on this inspection that entries were turned off the main north and south entries about 100 feet from the shaft bottom, and that there was about 600 feet of face at this date. The mine was perfectly dry, no water except that which was coming down the hoisting shaft was noticed and that was thrown out by a steam pump. I found this vein free from gas and the ventilation satisfactory. I visited the mine and made another inspection on the 18th of June, 1901, and discovered that the upper vein had been temporarily abandoned, and all the work confined to the lower one. The first crash had come and made a considerable squeeze, but the weight seemed to have settled at this date without doing any more damage to the mine than the breaking and crushing of a few heavy timbers. The circle had been made all around the shaft bottom and air-courses completed, and the ventilation found satisfactory. The air furnished to the mine was entering through an air chamber partitioned off one end of hoisting shaft. The mine was not far enough advanced on this visit to prove the success of longwall. My opinion was that the roof was too friable and soft. On the 14th of September, 1901, I inspected the mine again and found that it had made considerable progress since my former visit. I discovered on this visit that the four pillars of coal left around the bottom of the shaft for support were too weak to withstand the crush when the squeeze came in general all over, as it crushed the pillars, broke all the heavy timbers and did considerable damage to the shaft by crushing and twisting the curbing and I found men at work doing the repairing and putting the mine in order. I noticed at date of last visit that work had commenced again on the upper vein, but as it is operated at night and no men at work at the time of my visit I did not make an inspection of it on this visit. The coal in the upper vein is 18 inches thick, while the coal in the lower vein is 24 inches in thickness. Both seams are worked on the longwall plan. The coal of both seams is of extra fine quality for both steam and domestic purposes and finds a ready market at Kansas City. About 75 men employed.

JOHNSON COUNTY.

(Production, 9,695 tons.)

Coal has been discovered in nearly every part of Johnson county, but very little mining has been done here of late. Thirty-five years ago extensive mines were operated at Carbon Hill, Clear Fork and Knob Noster, but all these mines were abandoned before one-tenth of the coal was worked out—owing to its inferior quality. When the mines of this county were first worked the coal industry of the State was in its infancy, but as soon as other coal fields were developed with a superior article of coal to supply the demand it readily took the market, but mines have been operated on a small scale in this county every year since its first discovery of coal and the past year is no exception. In the statistical table of this county will be found names of parties, amount of coal produced, with all other information concerning the mines operated last year at Knob Noster, Montserrat and Warrensburg.

LAFAYETTE COUNTY.

(Production, 439,217 tons.)

Lafayette county is one of the principal coal producing counties of the State. It is also the oldest as well as one of the largest producers and is exceeded only by Macon county. The coal seam underlying this county is very thin, but extending under nearly every acre of its territory. A mine can be opened and successfully operated in any part of the county, and the large production of coal every year from Lafayette is due to the yield of her numerous mines, which are located all over the county. Several large and productive mines have been worked out and abandoned during the past year, but larger mines and more productive ones in their stead have been developed, and we expect to find the coal production of this county larger this current year than ever before. There were 58 mines in operation here during the last year, which produced 439,217 tons of coal, valued at \$709,849 for the product.

In producing this amount of coal 1,453 persons were employed in and about the mines in winter and in summer. Three inspections were made of all mines employing ten or more men since my last report was issued, and all were found in good sanitary condition. Following is a description of each mine:

Alma Post Office.

The same coal is mined at Alma as that in other parts of the county. M. W. Summers and Henry Dieckhoff operate mines in the locality of Alma during the fall and winter to supply local trade. Both mines have drift openings, and the coal is taken away in wagons and consumed at Alma and vicinity.

Bates City Post Office.

Thos. Perry is operating a local mine on his farm near Bates City to supply home trade. Drift opening. Coal consumed in vicinity.

Concordia Post Office.

A. F. Kresse is operating a mine 3 miles west of Concordia to supply local trade. Mine entered by a slope. Coal 20 inches and worked on the longwall plan. Coal taken away in wagons and consumed at Concordia.

Ed Rust operates a mine on the Hendrick land. Slope entrance. Coal 20 inches thick and operated during winter season.

H. F. Frerking is operating a mine west of Concordia. Mine entered by a slope and the coal consumed in the locality.

Henry Bartels is operating a mine near Concordia. Slope entrance. Coal 18 inches thick and worked on the longwall plan to supply home trade.

Peter Miller operated a mine last winter near Concordia to supply local trade.

Corder Post Office.

The Daisy mine is operated by W. H. Bell and is located southwest of Corder. Mine entered by a slope and ventilated by a small furnace. Coal 18 inches thick and worked on the longwall plan, and hauled in wagons to Corder.

J. H. Deholt. Mine located two miles west of Corder. Slope opening. Coal 18 inches thick. Worked on the longwall plan. Operated to supply local demand.

The Geisendorfer mine is located west of Corder. It is entered by a drift and operated in fall and winter to supply home trade.

The Morgan mine is located two miles southwest of Corder and operated by its owner in fall and winter.

Black Diamond mine is located at Corder. Shaft 30 feet deep. Hoisting by horse power. This mine is located nearly half a mile from the railroad, and the product is hauled from the mines in wagons, loaded on

cars at Corder and shipped over the C. & A. R. R. The same seam of coal as that of other mines in the surroundings of Corder is worked here and on the same mode of working, and same price paid for mining. From 10 to 15 men employed.

J. Hudson operates a mine on his own farm during the winter months to supply home demand.

Diamond Coal Co. Mine located at Corder and has shipping connection with the Chicago & Alton R. R. by a switch. Shaft 58 feet deep and equipped with good horse power rigging for hoisting. Ventilation is furnished by the aid of a furnace, with excellent results. I inspected the mine on the 27th of September, 1900, and found it in first class condition; safe and healthy, with the ventilation double the amount required by law. The rock is taken down in all the entries, making them high enough for mules to haul out the coal, and the mine can be made a productive one. It is opened out very systematically and is practically operated. I visited the mine again on the 13th of May and found it closed down for the summer months, but discovered Mr. Wilson, the superintendent, making the necessary improvements and repairs ready for the fall and winter trade. I made another inspection on the 23rd of September and found it in excellent condition. The mine had just started up for the fall and winter trade and everything was in good shape to handle a large business. The entries are high, wide, dry and clean and the ventilation and operation is perfect. Thickness of coal, mode of working and price paid for mining is the same as that of other mines in this locality. From 40 to 50 men employed and the product is taken to Kansas City.

Corder Coal Co. Mine located half mile west of Corder and has shipping connection with the Chicago & Alton R. R. by a spur switch. Shaft 80 feet deep and operated by machinery. Ventilation is furnished by a fan, which was giving good results at dates of inspection. I inspected the mine on the 27th of September, 1900, and found all the underground workings in good condition and the ventilation satisfactory, but I discovered the cages without covers, and the hoisting ropes in poor condition. They were condemned and the management instructed to replace them with new ropes at once, and also to put covers on cages. I also discovered at this inspection that the communication between the two shafts was not of the best, as it was too much obstructed with water and dirt to be available for the employees to pass through in case of an accident to main shaft; this also was condemned, and the company instructed to sink an escape-shaft in a more convenient place at once. I visited the mine again on the 13th of May and discovered that the escape shaft was sunk and an entry driven from the straight east to communicate with it. I found the air good and the general condition of the mine satisfactory. New ropes

had been put on to replace the old ones condemned, and the cages had been repaired and covers put on. I made another inspection of this mine on the 26th of October and found it all right, with the ventilation satisfactory. Thickness of coal, mode of working and price paid for mining is the same as that at other mines in this county. Thirty men employed. Coal taken to Kansas City.

Klondyke Coal Co. Mine located one mile north of Corder. Shaft 30 feet deep and hoisting by horse power. Ventilation is furnished by a small furnace. Coal 18 inches thick and worked on the longwall plan. About 5 men employed, paying \$1 per ton for mining. The mine is operated to supply local demand.

Salt Fork Coal Co. Henry Liase, Superintendent. Mine located half mile east of Corder and has shipping connection with the C. & A. R. R. by a switch. Shaft 45 feet deep; equipped with good horse power rigging for hoisting. Ventilation is produced by the aid of a fan, with satisfactory results. I visited the mine on the 27th of September, 1900, and found it in good condition. I discovered the ventilative current stronger and fresher at date of this inspection than on any previous one. The air splits at the face of the north entry to the east and west, traveling along the face of the workings and uniting again at the face of the south entry and returning to the up cast. The current traveling along the east face passes over considerable stagnant water which makes it heavy and sluggish, retarding its speed, but as only few men were working in that current I found it enough to properly ventilate that side. I made another inspection on the 13th of May and found that it was closed down during the summer months, but I discovered several men at work making improvements and getting the mine in condition for fall and winter trade. I found men shooting rock at the north entry and opening a new entry on the west side; the east and south entries will soon be abandoned.

I made another inspection on the 23rd of September and found the ventilation fully satisfactory and the mine in very fair condition. This mine has to contend with considerable faulty coal, which causes extra expense to get it out, but it is operated very practically. Coal 18 inches thick and worked on the longwall plan, using the movable face track. From 40 to 50 men employed. The product is taken to Kansas City.

Higginsville Post Office.

Higginsville is located near the center of Lafayette county, and is surrounded by coal mines, nearly all having shipping connection with the C. & A. and Mo. P. railways. There are 13 mines, large and small, in the immediate vicinity, of which 10 are commercial, having connection

with the above named railroads, while the 3 remaining mines are operated to supply home consumption.

Bonanza Coal Co. Mine located two miles east of Higginsville and connected with the C. & A. R. R. or shipping facilities. Shaft 70 feet deep and equipped with horse power for hoisting. The mine is ventilated by the aid of a furnace, which is giving good results, supplying plenty of fresh air to every part of the mine. I made an inspection of the mine on the 8th of September, 1900, and found it in good condition. It had been idle during the summer owing to depressions in the coal trade and only just started for the fall and winter work. Twenty men employed. I made another inspection on the 15th of May and found the mine in good condition. The rock on the entries had been shot down, and I found them high, wide, dry and clean, with 30 men at work. I visited the mine again on the 26th of October and found it in good condition, but the ventilation on the east side was weak owing to small and contracted airways, but the evil will soon be remedied by enlarging them. Thirty men employed. Coal shipped to Kansas City.

Farmers' Coal Co. Chas. Whilhelm, Superintendent. This company owns and is operating two mines one and one-half miles south of Higginsville, both of which are located on the Rocky branch, having shipping connection with the C. & A. and Mo. P. railways. Ventilation is furnished both mines by the aid of a fan, with very satisfactory results. The two mines have an underground connection and are working the same coal face and are ventilated by the same fan, and for all practical purposes may be considered one mine with two openings. I inspected both mines on the 8th of September, 1900, and found them in first class condition. I discovered on this visit that a fan to supply ventilation had taken the place of the furnace—a change always most accentable to the inspector and of decided benefit to the sanitation of any mine. Electric machines had been put in to do the undermining in place of picks, and men were employed at date of this visit to run the machines at \$1.94 per day and 60 cents per ton was paid to miners for loading coal after the machines and keeping up the rooms. I visited the mine again on the 15th of May and found men at work enlarging shaft No. 3 in order to increase its output. The size of the shaft will be 7x14 feet, made large in order to accommodate the large pit cars to be used in conveying the product of both mines to the one shaft; if this can be worked satisfactory, then one shaft will be abandoned. I made another inspection of these mines on the 23rd of October and found them in excellent condition, with the ventilation fully satisfactory. We observed on this visit that six machines of the Link Belt pattern were employed to undermine the coal. Machine runners were paid \$2.25 per day. The shaft had been enlarged and the output

largely increased, which makes this mine one of the largest producers in the county. Coal 18 inches thick and worked on the longwall plan. About 120 men employed at both mines. Product consumed at Kansas City.

J. H. Looney Coal Co. William Balew, Superintendent. Mine located one mile west of Higginsville and has shipping connection with the C. & A. R. R. by a spur switch extending from the main track. Shaft 72 feet deep and operated by steam power. The mine is ventilated by a fan and giving satisfaction. I inspected the mine on the 8th of September, 1900, and found it in a satisfactory condition, with a strong current of fresh air flowing around the workings. May 15th I visited the mine again and found men at work making repairs, hence no inspection was made on this visit. I made another inspection on the 23rd of October and found it satisfactory, with the exception of one hoisting rope, which was condemned and ordered replaced with a new one at once. Coal 17 inches thick and worked on the longwall plan, using the moveable face track. Thirty men employed. Product consumed at Kansas City.

Higginsville Consolidated Farmers' Coal Co. G. W. Stealey, Superintendent. This company owns 7 mines in the surroundings of Higginsville, but only 6 were operated during the past year. All of the mines have shipping connection with the C. & A. and Mo. P. railways.

Mine No. 1 is located on the west of Higginsville. Shaft 70 feet deep and equipped with machinery for hoisting. Ventilation is furnished by a fan with good results, and the mine in this respect satisfactory. I inspected the mine on the 7th of September, 1900, and found it in good condition. The roadways had been reconstructed, cleaned and found in good repair. I discovered the cages in a rickety condition and instructed the company to have them repaired. I visited the mine again on the 14th of May and found it closed for the summer and men were at work blasting rock and making other repairs in getting the mine in condition for fall and winter trade. I made another inspection on the 24th of October and found it in good condition, with all the safety appliances in good repair. Coal 18 inches thick and worked on the longwall plan. About 40 men employed, and receiving \$1 per ton for mining. Product shipped to Kansas City.

Mine No. 2 is located two miles west of Higginsville and has shipping connection with the Chicago & Alton R. R. by a switch. Shaft 45 feet deep and operated by horse power. Ventilation is produced by the aid of a furnace, and is giving very fair results considering the distance the air has to travel through small and contracted air courses, with many bends and angles encountered on its route. I visited the mine on the 7th of September, 1900, and discovered that the steam machinery had been

taken down and removed to mine No. 6 and a horse power apparatus built in its place. I found the mine in a satisfactory condition on this visit, with from 25 to 30 men at work. May 14th I visited the mine again and found it closed down for the summer, hence no inspection. I made another visit on the 24th of October and found the track had been taken out, the pit top taken down and the mine permanently abandoned.

Mine No. 3 is located one and one-half miles south of Higginsville on the Rocky branch, and has shipping connection with the C. & A. and Mo. P. railway. Shaft 25 feet deep. Hoisting by horse power. This plant was burned down several years ago and the mine remained idle until recently. The company took out the water and sunk another shaft, which is now used for hoisting, and the old shaft is used for an escape shaft. Coal 18 inches thick and worked on the longwall plan. About 30 men employed.

Mine No. 5 has a slope opening, and is operated by a few Bohemians who place the coal on the cars at a given price. Mine located on the Rocky branch.

Mine No. 6. Geo. Frank, Foreman. Mine located on Rocky branch one and one-half miles south of Higginsville, and has shipping connection with the C. & A. and Mo. P. railways. Shaft 25 feet deep and operate by steam power for hoisting. Ventilation is secured by the aid of a fan, with excellent results. I visited this mine on the 7th of September, 1900, and discovered that the horse power apparatus had been taken down and removed, and a steam plant built in its place. I found the inside workings of the mine in good condition. An underground connection between this and mine No. 2 will soon be made, and the coal of the latter mine will be taken out through mine No. 6, which will make this mine the largest producer in this locality.

I visited the mine on the 15th of May again, and found it in good condition. I also found considerable improvement made and more in course of construction, with a view to increased output. A fan will soon be erected to take the place of the furnace, which will be more satisfactory. On the 24th of October I made another thorough inspection and found the mine in excellent condition, with the ventilation satisfactory. A fan had been built here since my former visit, and this mine now is one of the best ventilated in the State. Coal 18 inches thick and worked on the longwall plan. Sixty men employed. Product consumed at Kansas City.

Mine No. 7 is a contract mine. It has a drift opening, and the ventilation is furnished by the aid of a furnace. Mine located two miles south of Higginsville on the Rocky branch and has shipping connection with the C. & A. and Mo. P. railways. Made 3 inspections of the mine since last report and found it in good condition. Coal 18 inches thick and

worked on the longwall plan, using the moveable face track. About 30 men employed. Coal consumed at Kansas City.

The Hoffman mine is located southeast of Higginsville. It is entered by a slope and ventilated by a furnace. Thickness of coal, mode of working and price paid for mining is the same here as that of other mines in this locality. The product is taken away in wagons and consumed in the surrounding neighborhood. Eight men employed in winter, receiving \$1 a ton for mining.

J. R. Longest has a mine on his land which was leased the previous year to J. S. Stephenson. Drift opening and ventilation is furnished by a furnace. Coal 18 inches thick and worked on the longwall plan. This mine has no shipping facilities and the coal is taken away in wagons. Six men employed in winter to supply home trade.

M. Woskoski operates a mine south of Higginsville during fall and winter to supply home demand.

Lexington Post Office.

Lexington is the oldest mining town in the State. Mining has been prosecuted in its vicinity for nearly 60 years, and the output of its mines is yearly increasing. Early in the 19th century coal could be found cropping out along the Missouri river banks for a distance of 20 miles or more east and west of the present location of Lexington, inviting the miner with his pick to come and get it out. Mines were operated in this locality to supply the numerous steamboats plying the Missouri river long years prior to the construction of a mile of railroad in the State. Comparatively speaking, mining is yet in its infancy here, as the seam is almost inexhaustible. Some large and heretofore productive mines have been abandoned along the river bank on account of the long haul of the coal out of the mine; other larger and which will prove more productive mines are being developed, and these will increase production. There are about 18 mines, large and small, in the immediate surroundings of Lexington, giving employment to about 900 men and boys. All the coal mined at this point, with the exception of the home demand, is shipped to market over the Mo. P. R. R. to Kansas City, Sedalia, Jefferson City and local towns along the line. Following is a description of the several mines and their location, together with statement of the condition in which we found them at dates of inspection:

Bell & Greer. Mine located southwest of Lexington. Ventilation secured by the aid of a small furnace, but fully adequate to the demands of the mine; it has two drift openings for the inlet and outlet of the air. Coal 18 inches thick, worked on the longwall plan and hauled away from the mine in wagons and consumed at Lexington. From 6 to 12 men em-

ployed, receiving \$1.12½ per ton for mining and wheeling in winter and 95 cents in summer.

C. A. Chanslor. Mine located on the south bank of the Missouri river east of Lexington. Drift opening and ventilated by a furnace. This is called a city mine as all the coal is hauled away in wagons and consumed at Lexington. Underground connection having been made with the Walton mine on the west side, added more air to the ventilative volume and makes the current stronger. Ten men employed and \$1 per ton paid for mining.

Dover Coal Co. T. Davis, Manager. Mine located at Dover and has shipping connection with the Boonville & Lexington branch of the Mo. P. R. R. Mine entered by a drift and ventilated by a furnace. I made 3 inspections of this mine during the past year and found it in a very fair condition on each visit. I discovered on my first visit during the past year that the air entered the first south entry off the east instead of the straight south, thus shortening the route of the current as well as enlarging the area, making the air stronger all over the mine. The rock was blasted down on the entries, a heavier rail laid, and a mule is now used to haul the coal. Thickness of coal, mode of working and price paid for mining is the same as at the mines in the surroundings of Higginsville and Lexington. About 40 men employed. One dollar per ton paid for mining. Coal consumed at Kansas City.

O. M. Gaffin. Mine located two miles east of Lexington and has shipping connection with the Mo. P. R. R. by a spur switch extending from the main track. Mine entered by a drift and ventilation is secured by the aid of a furnace. This mine was formerly operated by the Lexington Coal Co., but was abandoned for several years and filled up with water, but about two years ago Mr. Gaffin took out the water, cleaned up the mine and commenced operations. I made the first inspection at this mine during the past year on the 14th of September, 1900, and discovered that the furnace was inadequate to properly ventilate the mine and that it had to be enlarged or the air courses had to be cleaned and made larger. The mine makes considerable water, which accumulates in the airways, thus retarding the ventilative current on its route and the company was instructed to provide a remedy at once. I visited the mine again on the 18th of May and found it idle, hence no inspection was made at this date.

I returned on the 26th of September and found that the air-courses had been cleaned and enlarged and the ventilation good; 45 men at work. Thickness of coal, mode of working and price paid for mining the same as other mines in this locality.

I. C. McGrew. Mr. McGrew owns and is operating two mines in this county, which are located three miles west of Lexington and have

shipping connection with the Missouri Pacific railroad by switches. Both mines are entered by drifts, and are ventilated now by a furnace. The two mines have an underground connection and are working the same coal face and may be termed one mine with two openings. I made the first inspection of these mines on the 13th of September, 1900, and found them in excellent condition, with three times the amount of air required by law. I discovered that an air shaft had been sunk between drifts one and two and a furnace built to secure ventilation in place of the fan. The air shaft having been sunk on the bluff at an elevation of 170 feet above the entrance to the mine, provided such extra natural assistance that it enables the management in cold weather to dispense with the furnace. The furnace being located between drifts one and two, the air currents now enter the mines at the respective drifts, travel around the face of the working on each side, and meet at the upcast. I also discovered that Mr. McGrew had put in the Link Belt electric machines in his mines to do the undermining with machines in place of picks, but as they were just newly introduced and all the hands new and unfamiliar with their work no test was attempted.

I made another visit to these mines on the 16th of May and found that the miners were not at work, owing to some dispute between them and Mr. McGrew, but I found a force of men at work in the mines making preparations to put in electric haulage. The old roadway had been taken out and replaced by a heavy rail, and when completed and ready for operation will make these the best mines in the county. I made another inspection on the 25th of September and discovered that the electric haulage had been completed, was in operation and proved to be a success. All the mules were taken out of Mine No. 1 and the electric motor put in to do the work at that mine; it work proved so successful that Mr. McGrew purchased another motor and put it to work at Mine No. 2 in place of mules. This method of haulage is an innovation in Lafayette county, though it is a success in other counties. All the entries are lighted by electricity, giving the mines an up to date appearance in every respect. I found the mines in excellent condition at date of this visit; the ventilation was extra good, the entries high, wide, dry and roomy, and the mines clean and healthy, with good roadways. The company has spared neither time or money to make the mines first class in every respect.

The coal is about 18 inches thick and worked on the longwall plan, using the movable face track. Machine runners and paid at the rate of \$2.25 per day, and loaders after the machines get 63 cents per ton for loading, wheeling same to the junction, to clean up the rooms and keep them in repair. From 125 to 150 men and boys employed in the two mines. The product is shipped to Kansas City, where it is consumed.

Jas. Rosewell & Bro. operate a mine east of Lexington. Shaft 75 feet deep, and operated by horse power. Mine ventilated by a furnace with good results. Coal 22 inches thick and worked on the longwall plan; from 3 to 6 men employed. The product is consumed in the surrounding country.

The Walton mines is located on the east side of Lexington on the bank of the Missouri river, and is called a City Mine. It is entered by a drift and ventilated by a furnace. It is also connected on each side by other mines, and the air enters the mine on the west, passing along the face of workings to the Chanslor mine, making the ventilation good in all three. Thickness of coal, mode of working and the price paid for mining is the same as that of other mines in this locality.

Seth Spruce operates a mine adjoining the Walton mine, but only in fall and winter to supply home trade.

The Macey mine is located about two miles west of Lexington and has shipping connection with the Missouri Pacific railroad. Mine entered by a drift and ventilated by a furnace, which was giving very good satisfaction at dates of inspection. I inspected the mine on the 13th of September, 1900, and found it in very fair condition, with ventilation satisfactory. I visited the mine again on the 16th of May and found it idle, hence no inspection was made. I made another inspection on the 25th of September, 1901, and found that the mine had just started up. The ventilation was satisfactory; 25 men were at work. Thickness of coal and other conditions are the same here as that of other mines in this locality.

The Stay Coal Co. Mine located 5 miles east of Lexington, and has shipping connection with the Boonville and Lexington branch of the Missouri Pacific R. R. Mine entered by a drift and ventilated by a furnace with satisfactory results. I inspected the mine on the 14th of September, 1900, and found it in good condition, with ventilation good all over the mine. I discovered that all the work on the east near the entrance had been abandoned, and new works opened out on the south and west. The ventilative current enters the mine through an old drift on the east side, and travels along the face of the workings to the upcast, giving good results. I visited the mine again on the 18th of May, but found it idle; no inspection was made. I made another inspection on the 26th of September and found it in very fair condition, with the ventilation good. The coal is 22 inches thick, and worked on the longwall plan. The moveable face track is practiced here. About 30 men employed. Product consumed at Kansas City.

Arell & Serrat Coal Co. Mine located at Lexington, near depot, and has shipping connection with the Mo. P. R. R. by a spur switch. Shaft 125 feet deep, and equipped with first class machinery for hoisting, drain-

ing and ventilating. This mine was sunk in the year 1894, and rigged up with good equipment. An escapement shaft was sunk and a fan erected on top of same, and the plant was constructed with modern improvements, being sunk, however, in close proximity to abandoned mines which were full of water, the company was caused considerable expense in taking it out and as the mine of itself was making a large amount of water made it a very expensive mine to operate. The year 1894 being the year of greatest depression in the coal trade of this State, the company, after spending a large amount of money, concluded to quit operation and closed down the mine temporarily in the Spring of 1895, and it remained closed until the spring of 1901, when Mr. Serrat took out the water, cleaned the mine and started operation in the month of May. I made a thorough inspection of it on the 26th of September and found the ventilation disarranged at certain places for want of doors, and while the fan was delivering plenty of air to the mine the current was allowed to travel in a direction contrary to that where it was needed. We were informed while at the mine that a new man had taken charge of the underground work on that day and had already started to hang doors and conduct the air around its proper route and we have every reason to believe that the ventilation has been satisfactory since the date of last visit, as no complaint has been received since then at this office.

The mine is still making a large amount of water and roadways have to be corduroid. Coal 20 inches thick and worked on the longwall plan. About 40 men employed. Coal shipped and consumed at Kansas City.

Lexington Coal & Mining Company. Major R. M. McDowell, Mgr.; office at St. Louis. B. F. Wiley, general superintendent. This company owns and is operating 5 mines in this county at present, and this number will be increased in the near future as the company contemplates opening more new ones. All the mines are located on the south side of the Missouri river, on the east and west of Lexington, and have shipping connection with the Missouri Pacific railroad. The mines are worked on the longwall plan, and the price paid for mining at present is \$1.05 per ton for pick mined coal and 63 cents for loading machine coal, all coal to be wheeled and delivered at the junction. A contract for the above prices was signed by the miners and operators in the month of May, 1901, which took effect on the first of June, independent of the action of the conference of miners and operators held at Kansas City in the month of June, and this contract was made for one year.

The thickness of the coal on the west side of Lexington is about 18 inches, while on the east side it is about four inches thicker. The coal is underlaid by a good fire clay mining, and is overlaid by a strong rock roof, which is well adapted for the longwall system of mining, as no

timber is used or needed. The movable face track is used in all the mines of this company, which is not only very convenient and economical, but of a decided advantage to the miner in loading his coal. The mines of this company are practically operated, well ventilated, and the requirements of the mining laws observed in every respect. All necessary improvements in and about the mines are attended to during the slack times in summer, and when the fall and winter trade opens, the miners are in condition to furnish the coal and supply the demand without being hampered with breakdowns. The new mines recently sunk and their equipment will be fully described in this report. Follownig is a description of the mines and their location:

Graddy Mine, Wm. Parks, foreman. Mine located about two miles west of Lexington. Mine entered by a drift and ventilated by a furnace which is giving excellent results. The ventilative current enters the mine at the mouth of the drift, and travels the south entry until it reaches the cross entries, where it divides to the east and west, passing along the face of the workings until it reaches the main south at its terminus where the two currents unite and return to the furnace. The furnace shaft having been sunk on top of a high hill with an elevation of 150 feet above the inlet, causes a constant current of air to travel through the mine at all seasons when the temperature of the mine is above that of the outside by this natural ventilation without the aid of the furnace. I inspected the mine on the 13th of September, 1900, and found it in a satisfactory condition. On the 16th of May, I made another inspection and found ventilation and general condition of the mine all right. On the 24th of September, 1901, I made another thorough inspection and found the ventilation fully satisfactory and the mine in good sanitary condition. The air in this mine has a long distance to travel, as the main entry is nearly a mile from its entrance to its terminus, but the air is fresh and strong all over the mine. The roadways are double on the main south entry and the mules are thus enabled to pass one another without waiting, making good headway in hauling out coal.

The Seawell Mine is located at Meyrick Junction, Elias Spruce, foreman. It is entered by a drift and ventilated by a furnace, which was giving good results at dates of inspection September 13th, 1900, May 18th, and September 24, in 1901. I found the ventilation good and the mine in good repair. It has been in operation for a great number of years, and the ventilative current has a long route to travel, but still the mine is well ventilated, and the foreman is to be commended for improving the current by shortening its route at every opportunity.

The Glen Oak is located about three miles east of Lexington, and has shipping connection with the Mo. P. R. R. by a spur switch three-

fourths of a mile long, extending from the main track. Shaft 45 feet deep. Equipped with good machinery for hoisting. Ventilation is furnished by two fans, set at separate location and operating on separate currents. I made the first inspection of this mine on the 20th of August, 1900, and found the ventilation good. The ventilative current is divided into three divisions; one current travels the main east entry to its terminus where it is split to the north and south, the current traveling on the north side was conducted to one fan, while the current on the south side and that of the west side was conducted to the other fan, and each furnishing a sweeping current of fresh air to every part of the mine. I made another thorough inspection of this mine on the 26th of September, and found it in a satisfactory condition, with the ventilation good all over it, and the safety appliances in good repair. This mine at date of last inspection had 150 men and boys employed, and is the largest producer in this county. Thickness of coal, mode of working and price paid for mining is the same as that of all the other mines operated by this company in this locality. Having mentioned in the last annual report from this department that the Lexington Coal Company had purchased a large tract of coal land two miles southwest of Lexington. We are pleased to state in this report that great progress has been made by the company in sinking shafts, developing the mines, and improving the newly acquired property. On our first inspection of these new mines on the 16th of May, 1901, we found two shafts had already been sunk and equipped and preparation being made to sink the third one. About three miles of railroad had been constructed, many new houses built at mines for the use of miners and a large number of houses removed from abandoned mines and rebuilt here, making this a very promising and populous mining camp. These mines are known as the Valley, Midway, and Summit mines. Their equipment is first-class, and from their contemplated output, for which they are so well arranged, must of necessity prove of great benefit to the community as well as to the company. In mentioning the plan and equipment of the Midway Mine we shall have described all, as each is an exact counterpart of the other, except the depth of the respective shafts, and the generation of the electric power which is confined to the Midway, or Central Station. The Valley Mine reached the coal at a depth of 87 feet; the Midway at 138 feet, and the Summit at 180 feet. The hoisting machinery consists of a pair of first motion engines, built by the Danville Foundry and Machine Company of Danville, Illinois. These engines, in pattern, resemble the Litchfield engines, but are, we think, an improvement over the latter. The cylinders are 16x32 inches, the drum is double, six feet in diameter with a six-foot face, and is so arranged that it can be made to act as one, de-

livering material to any elevation desired, permitted by the length of the hoisting rope. By this device no slack rope has to be taken care of. Boiler houses are built of brick, with iron roofs, and supplied at first by two boilers 72 inches in diameter by 22 feet long, with 26 six-inch flues each. These boilers are steel and are suspended from steel eye beams resting on cast iron columns on an independent foundation, the brick walls surrounding them in no way or manner acting for a support. This is a new feature so far as coal mining equipment is concerned and will prove of great benefit and economy in the event of repairs, besides avoiding the injury to the boiler walls by expansion. The pit head is 64 feet high from the ground to the pulley wheels and composed of solid pieces of timber 12x12 inches. Reaching the bottom of the shafts we found the main entries running east and west for one hundred feet on each side of the shafts. These entries are 15 feet wide and six feet high; cross entries are then turned off of the main entries to the north and south on a curve of fifty radius. The shafts are 7x14 feet and arranged with three compartments, two of which will be used in lowering and hoisting the cages, while the other will be used for pipes, wires and ladders. The over-casts follow after plans not only new in our State, but they are of the most substantial nature. The roof rock is seven feet in thickness, and above this in the solid strata the over-casts have been driven from the air or fan shaft over and above the main entries to the south edge of the entry pillar; thence connecting with the main air course. The advantage of such an over-cast must be apparent to all in any way familiar with such matters, as it is good for all time and requires no repairs or further attention. The ventilative volume will be conducted around the workings at each mine in four different currents and will prove very healthy and well ventilated mines. An escapement shaft has been sunk at each mine and a fan 12 feet in diameter is erected and located over a shaft 7x10 feet of which 7x7 feet have been partitioned off for the air to pass, and 3x7 for a manway where ladders have been put in for exit in case of necessity. These ladders are constructed of Norway iron to insure the largest possible factor of safety. The coal will average 22 inches in thickness, and worked on the longwall plan. It is of a most excellent quality for steam or domestic purposes. As the Midway mine is the central station from which will be transmitted the electricity to operate the other mines, an additional building 44x30 feet has been built at the mine, and in addition to the hoisting plant an electric plant is also provided of two 150 K. W. dynamos. Generator driven by a 250-horse power high speed engines. This plant is expected to furnish the power for mining and haulage in the three mines, one of which is 3,800 feet north of Midway and the other 5,200 feet south of the same

point. When the three shafts are fully completed the cost, of sinking and equipment will reach \$70,000. The mines each have an estimated life for fifteen or twenty years, with an average daily output at each of 25 cars per day, or a total product of 75 cars per day. In addition to the above numerous improvements may be mentioned a large blacksmith and machine shop which has been erected and provided with lathes, power punch, cutter, drill press, emery wheels, grinstone, saws, forges, and all the tools and the necessary machinery to build pit cars and make all the repairs about the mines. I visited these mines again the latter part of September and discovered several machines at work undermining the coal, but the haulage way being short, the coal as yet is taken out by mules. In the next annual report we will attempt an estimate of the work done by each machine, and the labor and expense of running same. The mines at the time of writing this report, January 30th, 1902, have about 150 men at work in them and are producing about 30 cars of coal per day, and are daily putting on more men and increasing the output, and by the time this report reaches the hands of its readers the mines will be great factors in the coal production of Lafayette county.

Mayview Postoffice.

Mayview Coal Co. Mine located near Mayview on the west, and has shipping connection with the Chicago & Alton R. R. Shaft 130 feet deep, and operated by steam power. Ventilation is furnished by a furnace with satisfactory results. I inspected the mine on the 10th of September, 1900, and found the ventilation all right, but shaft curbing was bulging into the shaft and stopping the cages from running, and instructions were given to have curbing taken out and shaft retimbered. I made another inspection in May and found the shaft in better condition. I discovered on this visit that the mine had changed hands, and the new operator was having considerable improvement made below. The ventilation was good, but safety catches were found in bad condition, and ordered repaired. I visited the mine again on the 26th of October, and found it in a satisfactory condition. Fifteen men employed.

A. Alcorn operates a mine near Mayview in the winter months to supply local trade.

Jake Stephens is operating a local mine southwest of Mayview to supply local trade.

The Wright Mine is also operated during fall and winter and the coal consumed in the vicinity.

Napoleon Postoffice.

The mine formerly operated by Duffendack, and known as the Napoleon Coal Co., was closed down and abandoned in the year 1894, and

it remained idle until the past year, when the present operator took out the water, cleaned the mine and commenced operation in the spring of 1901. The mine is located one mile east of Napoleon and connected with the Mo. P. R. R. by a switch. Shaft 45 feet deep, operated by horse power. Ventilation is furnished by a small furnace, which is not fully up to the requirements of the mine. I visited the mine in February, but found it idle and did not make any inspection. On the 27th of September I made another inspection, and found the ventilation deficient and weak, and requested it remedied at once. Ten men employed.

Waverly Postoffice.

Silver Creek Coal Co. Mine located one-half mile west of Waverly, and has shipping connection with the Mo. P. R. R.. Shaft 125 feet deep. Operated by steam power. Ventilation is furnished by a small fan which is doing effective work by properly ventilating the mine. I made three inspections of the mine during the past year, and found it in a very fair condition on each visit. I discovered at date of last inspection, October 25th, that the company had not sunk an escapement shaft, and was instructed to do so at once. Coal 46 inches thick, and worked on the room and pillar plan, and 70 cents per ton paid for mining.

The Buckhorn Mine is located one mile west of Waverly and connected with the Mo. P. R. R. by a switch. Shaft 110 feet deep, and operated by machinery for hoisting. Ventilation is secured by a fan with good results. The mine has been closed down several times and changed operators as often. The coal will average nearly four feet in thickness, and seems to be of very good quality for steam purposes. The roof over the coal is a black slate easily secured by timber, and by good management this mine, in our opinion, could be successfully and profitably operated.

Wellington Postoffice.

Wellington Coal Mining Co. Mine located two miles west of Wellington and has shipping connection with the Mo. P. R. R. Shaft 40 feet deep, and hoisting by horse power. It is ventilated by a furnace with very satisfactory results. I visited the mine three times since last report, but found it idle at date of one of my visits, and only two inspections were made of the inside workings. The mine was found in good condition at each inspection. Coal 18 inches thick, and worked on the longwall plan, using the moveable face track. From 30 to 40 men employed during fall and winter, receiving \$1.00 per ton for mining. Coal consumed at Kansas City.

Labor Exchange Coal Mining Association. Mine located one mile west of Wellington. Shaft 106 feet deep, using steam power for hoist-

ing. The mine has shipping connection with the Missouri Pacific Railroad by a spur switch extending from the main track. Ventilation is furnished by a furnace with excellent results. This mine is operated on the co-operative plan, and all the shareholders are practical miners. It is opened and operated very practically, and in all particulars satisfactory to the Inspector. I made three inspections since last report and found the mine in excellent condition at each visit. An escapement shaft was sunk since former inspection, and a furnace built, and all other demands of the law fully complied with. Thickness of coal, mode of working, and price paid for mining is the same as that at other mines in this locality.

L. B. Zeits. Mine located one and one-half miles east of Napoleon, and has shipping connection with the Mo. P. R. R. Shaft 40 feet deep, and hoisting with horse power. Ventilation is satisfactorily furnished by a small fan. This was formerly operated by the Missouri River Coal Co., but in the year 1896 the plant burned down; and the mine remained idle until recently, when the present operator leased it, took out the water and commenced operation. At date of first inspection, September 12th, 1900, 15 men were employed, and the mine was found in good condition. The rock had been shot down in all the entries and mules used now to haul out the coal. I visited the mine again on the 17th of May and found it idle. No inspection made. On the 1st of November, I visited the mine again and found it in good condition. Coal 18 inches thick and worked on the longwall plan, using the moveable face track. From 15 to 20 men employed. Coal consumed at Kansas City.

The Carter Mine is located $1\frac{1}{2}$ miles east of Wellington, and has shipping connection with the Missouri Pacific Railroad. Mine entered by a drift and ventilated by a furnace. I made three inspections of the mine since last report was issued and found the ventilation good at each inspection. At date of first inspection, September 12th, I discovered a new air shaft sunk on the left side entry at the face of the workings and a new furnace built which was giving good results. May 16th I visited the mine again and found the air good, and on my third inspection on the 1st of November, I found the ventilation satisfactory. The mine is operated along side of a hill in the croppings and is very wet, but it has a natural drainage, and while the roadways are wet, there is no lodgement of water over them. Coal 18 inches thick and worked on the longwall plan; from 30 to 40 men employed. \$1.25 per ton is paid for mining and wheeling during the winter months. The product is consumed at Kansas City and points west.

I. A. Edmonds sunk a shaft during the past year, half a mile east of Waterloo and struck coal at a depth of 43 feet, and equipped the mine with horse power apparatus. The mine is worked on the same seam, and the same method of mining practiced as that of other mines in the same locality. Coal is shipped to Kansas City over the Missouri Pacific Railroad. Ten men employed.

LINN COUNTY.

Production, 85,459 tons.

The Brookfield Coal Co., operates a mine, half a mile east of Brookfield, and has shipping connection with the H. & St. Joe R. R. by a spur switch. Shaft, 150 feet deep, and operated by steam power. Ventilation is furnished by a furnace which gives plenty of air to the few men that work in the mine; but it is a poorly constructed furnace, and we instructed the company to take it down and build it anew. Coal, 28 inches thick; but there is a layer of slate 8 inches in thickness running regularly through the center of the coal which has to be picked out and thrown away, leaving only from 18 to 20 inches of coal to be loaded out. This slate or "Black Jack," as the miners call it, fills up the gobs to that extent that the men have to run out dirt for want of room. It is worked on the longwall plan, and employs from 10 to 18 men, while connection is made with the H. & St. Joe R. R., very little of the product is shipped; it is mostly consumed at Brookfield and vicinity.

I. Burdell & Co. sunk a new shaft during the past year, and struck coal at a depth of 135 feet; the mine is equipped with horse power rigging for hoisting. Coal 28 inches thick and worked on the longwall plan. Coal consumed at Brookfield. Instruction given to company to sink escape shaft.

The Black Plume is operated by its owner, Mr. Wm. Nickells. It is located half mile south of the Burdell mine and is working the same coal seam, on same method as last named mine, and the same price paid for mining. Shaft, 150 feet deep; hoisting by horse power. Product consumed in the immediate surroundings.

The Schaefer Mine is located two miles northeast of Brookfield. Shaft, 150 feet deep and operated by steam power for hoisting. Ventilation is secured by the aid of a furnace, and the mine is well ventilated. Coal, 28 inches thick and worked on the longwall plan, the roof over the coal is of the slate and soapstone variety and easily secured by timbering. This has a good output for a local mine, and could be made a productive one if it had shipping connection; but located as it is two miles from the railroad it is confined to local

trade and the product is consumed at Brookfield and vicinity.

L. R. Williamson operates a mine in the same locality as the Schaefer. Shaft, 155 feet deep; using horse power for hoisting. Ventilation is furnished by a fire basket with very poor results; an air shaft was sunk during the year. Coal, 28 inches thick and worked on the longwall plan.

Marceline Postoffice.

R. F. Landreth & Son operate a mine at Marceline. Shaft, 144 feet deep; hoisting by horse power. Ventilation is furnished by a furnace and at date of first inspection I found that there was plenty of air coming down the mine, but the aircourses were so choked up with dirt that the air could not travel through in sufficient quantity to ventilate it properly and instructions were given the company to have them cleaned at once. This mine is supplying local trade, and running only in fall and winter. During the summer season the roof caves and falls on the entries and in the air-courses, where it is allowed to remain until winter sets in, business is then good and time cannot be taken to clean up as there is more money in sight in taking out the coal, so the falls are thus permitted to accumulate blocking passage ways and interfering with the air current. This kind of management indicates the wildest kind of false economy, to say nothing of the indifference displayed in providing suitable conditions for miners to work in. Coal, 28 inches thick and worked on the longwall plan. It is consumed at Marceline and vicinity.

Marceline Coal Co., James Hemmings, superintendent; Barney McElwen, foreman. Mine located at Marceline, and has shipping connection with the Santa Fe Railroad by a spur with extending from the main track. Shaft, 185 feet deep; equipped with first-class machinery. The mine is ventilated by a 12-foot fan, which was running at a speed of 75, 68 and 90 revolutions per minute respectively, at dates of inspection, and was passing 17,660 cubic feet of air in same time on the west side, while 16,140 cubic feet was passing on the east side in same time. All the work has been confined to the south side of the mine for several years, and this volume of air was circulating around the workings on that side; the main current traveling the main south entry to its terminus and there split to the east and west, but enough air was permitted to escape on each entry to keep them fresh and healthy for men and mules to pass through. The main volume of the ventilative current passes along the face of the workings and returns to the up-cast; the current from the east return-

ing to the fan shaft over an air-crossing. Three inspections have been made of this mine since the last report was issued, and the ventilation as well as the general condition of the mine was found satisfactory. I made the first inspection on November 28th and found about 200 men and boys employed, and the mine in good condition. I returned on the 2nd of May and made another inspection with satisfactory results, I found the ventilative current good at the face of all the working places, and the mine in good sanitary condition. This mine is extensively worked, all the entries are driven about 2,000 feet from their starting point, which makes the coal faces 4,000 feet apart from east to west; this makes a long route for the air to travel, but as the mine is practically operated the management does not encounter any difficulty whatever with a deficiency or an impure air. As soon as an entry is cut off and abandoned, it is immediately filled up with dirt—which accomplishes two purposes, viz.: one avoids the accumulation of black damp, and the other furnishes support to the roof and holds it in place. The benefits derived by the air current from this method is very noticeable for after its return to the up-cast after traveling over a route of about 7,000 feet, it is nearly as fresh as when it enters the mine, and the lights burn as bright. I made another inspection on the 16th of August and found the mine in a healthy condition. The ventilative volume was not so strong on the main south entry at this date as at former inspections, owing to defects in the casing and blades of the fan, which were ordered repaired at once. Coal, 28 inches thick and worked on the longwall plan; \$1.05 per ton is now paid for mining. About 200 men and boys employed. The Santa Fe Railroad Company consumes a large portion of the product.

LIVINGSTON COUNTY.

Production, 1,177 tons.

Chillicothe Postoffice.

John Adams operates a mine five miles north of Chillicothe during winter season to supply local demand. Shaft, 70 feet deep; hoisting by horse power. Coal, 18 inches thick and worked on the room and pillar plan. Product consumed at Chillicothe and that locality.

The Cox's Star Mine is located in the same neighborhood, and is operated by its owner, W. L. Cox. Mine only operated in fall and winter, and the product consumed in vicinity.

The Eagle Coal Mine is operated by the Cox Bros. Shaft, 60 feet deep; hoisting by horse; coal, 22 inches thick and worked on the room and pillar plan. The mine is located five and one-half miles

north of Chillicothe, and the product is hauled and consumed in that city and vicinity.

Mooresville Postoffice.

Tindell & Co., operate a mine near Mooresville. It is entered by a slope and ventilated by a small furnace. Coal, 18 inches thick and worked on the longwall plan, mine only operated in fall and winter, and the coal is taken away in wagon and consumed at Mooresville and vicinity.

MACON COUNTY.

Production, 1,025,213.

This is the banner coal producing county of the State, having stood at forefront for some years, but never before so decidedly as she does this year. Her output of coal for the year 1901 shows a total of 1,025,213 tons mined, and an increase in the production of 429,916 tons, or 72 per cent. This is certainly a very fine showing and must be very gratifying to every citizen of the county. If no unforeseen troubles arise during the current year a still further increase may confidently be expected. In the production of this large amount of coal only 17 mines were operated, furnishing a better idea of the character and capacity of the mines than could be gathered from a long detailed statement. The county produced 27 per cent. of the entire output of the State, and when it is remembered that there are 316 mines in the State, it can be easily seen what the 17 mines of Macon had to do and of course some of these are small, furnishing simply a local demand. During the year there were 2,102 men and boys that found employment in and around the mines. The amount received at the mines for the output was \$1,042,327, showing an average of \$1.01 $\frac{1}{8}$ per ton.

Powder, it will be observed, played an important part in the excavation of the coal, there being 35,912 kegs consumed which cost the miners during the year \$71,824.

The same seam of coal is worked throughout the county and the room and pillar method universally practiced, except at Lingo, where the longwall system is in use. The larger mines are located at Ardmore, Bevier and Lingo, but there are a few small mines at other points operated to supply the local trade. For detailed information see notes on the mines following.

Ardmore Postoffice.

The Kansas & Texas Coal Co.; B. F. Hobart, President; F. Doubleday, Genl. Manager, and Arthur Vail, Supt. This company

owns and operates a large number of mines in this county all having shipping connection with the Hannibal & St. Joe, and Wabash Railways by switches, and are great factors in the coal production of Macon county. Ardmore is a mining camp located three miles west of Excello near the Macon county line, and a switch built from Excello connects the mines with the O'Mumma Branch of the Wabash Railroad and with the H. & St. Joe road, as the said switch has lately been extended and now connects with the latter road at Bevier. The coal company owns a locomotive engine for switching the cars to and from its respective mines.

Mine No. 57. Jas. Weeks, foreman. Mine located near Ardmore. It is entered by a slope and ventilated by a furnace. I made three inspections of all these mines since last report was issued, and found them in very fair condition. On my visit to this mine on the 9th of May I found a deficiency in the south and east entries, but upon investigation found that a new air shaft was being sunk, which would, upon completion, furnish the remedy. On my last visit to the mine, August 20, 1901, it was found that the furnace had been removed and placed in the new air shaft which had been finished. This not only made the air of the mine entirely satisfactory in every part of it, but the other conditions were equally satisfactory. This mine, like all others in the county, is operated on the double entry room and pillar plan.

Mine No. 57 Annex. This mine opened out in a hill beyond 57 proper, and the coal is hauled out through the first mentioned mine and is dumped from the same tipple as the latter, and both mines are in charge of same foreman. I discovered on my second visit that a new air shaft had been sunk, but the furnace was not built or the doors set suitable to conduct the air current for the new air shaft, and a deficiency was found in some parts of the mine on this visit, and the foreman was instructed to substitute wooden doors in place of the curtains. On my next visit to the mine I found the ventilation good and its general condition satisfactory. Coal about four feet in thickness, and worked on the double entry room and pillar plan, and extracted by blasting off of the solid. About 150 men employed at both of the mines, and receiving 60 cents for mining unscreened coal.

Mine No. 62 is operated by John Brock. It is located one mile west of Excello, entered by a drift and ventilated by a furnace with very fair results. Coal runs irregular and faulty. It is operated on same method as other mines of this company. Twenty-five men employed.

Mr. Brock is operating another mine in the same locality. This is a shaft 40 feet deep, and the hoisting is done with steam power. I inspected the mine on the 12th of July and found the air deficient; in fact, there was no system of ventilation adopted, as the mine was originally opened as a prospect to test the coal. Two efforts had been made previously to work it, but with poor success. The company is now making a final effort to see what can be made out of it before spending more money in sinking an air shaft and building a furnace; the coal is very low and faulty.

Mine No. 69 is located southeast of Ardmore. It is entered by a drift and ventilated by a furnace. A new air shaft was sunk during the past year at face of north entry, and a new furnace built, which was giving satisfaction. I made three inspections of the mine during the year and found it in excellent condition on each visit. Coal four feet thick, and worked on double entry room and pillar plan. About 40 men employed. Jas. Weeks, foreman.

Mines Nos. 70 (70 east, and 70 south,) are located a half a mile southeast of Mine No. 69. The three mines are located within a radius of one-fourth of a mile, and the coal is taken out from the three mines and dumped into cars from the same tippie. The mines are elevated above the railroad, and give plenty of fall for the coal to be screened and separated into various grades in loading cars. All three of the mines are entered by drifts and ventilated by furnaces. I made three inspections of the mines since last report was issued and found them in good sanitary condition at each inspection with the ventilation satisfactory at each mine. The coal runs irregular and faulty in some of the mines, and from three to four feet in thickness. I noticed also that the roof was very friable in places, and hard to secure with timber. The mines are operated on the double entry room and pillar plan. From 150 to 200 men are employed at the three mines, and 60 cents per ton is paid for mining unscreened coal. Peter Merron, foreman.

Mine No. 52 is located one and one-half miles west of Excello. It has a slope opening, and ventilated by a furnace. This is a new mine opened out in August, 1901. It is operated on the same method and under the same management as all the other mines of this company in this vicinity.

Bevier Postoffice.

Bevier is a prosperous mining city located on the H. & St. Joe R. R., five miles west of Macon City, and supported almost entirely by the mining operations carried on in its surroundings. There are 1,000 miners employed at the mines within a radius of three miles of Bevier. The coal belt that underlies this county embraces a body of coal almost

inexhaustible. Bevier and its vicinity being located most favorably within the belt. While millions of tons of coal have been taken out and several large mines have been worked out and abandoned, yet larger mines have been opened in close proximity to the abandoned ones and are even larger producers. The city is continually growing and improving.

Bevier Black Diamond Coal Co., Wm. Brydon, foreman. Mine located one and one-half miles southwest of Bevier, and has shipping connection with the H. & St. Joe R. R. by a spur switch extending from the main track. Shaft 60 feet deep; equipped with good machinery for hoisting. The ventilation is furnished by a 12-foot fan. I made the first inspection of the mine on the 30th of August, 1900, and found the air all right. I discovered on this visit that the fan had been removed and set over the escape shaft, and was exhausting the air from the mine. The ventilative current was found coming down an air shaft at the face of the mine and traveling direct to the miners fresh and strong. Ventilation was very satisfactory on this visit. I made another inspection on the 16th of March and found the ventilation and general condition of the mine satisfactory. I was informed on this visit that the mine had changed owners and was operated by parties from St. Joseph. I visited the mine again on the 11th of May and found it in a satisfactory condition. I visited it again on the 12th of August, 1901, and found it closed down, and on inquiry was informed that the new company had bought a large tract of coal land adjoining the mine property and contemplated the opening of a new mine on it. The location was surveyed and platted at date of my last visit. I made another visit to the Diamond Mine on the 4th of December and discovered that it had resumed operations with 65 men at work, some driving rooms while others were drawing pillars with the calculation of abandoning the old mine as soon as the new mine was sufficiently developed to supply the required amount of coal to reach the demand made of the company. The new mine is located one and one-half miles southwest of the Diamond, and its equipments will be elaborately constructed and up to date in every respect, but as it will not be ready to produce any coal during the present year we will postpone its descriptions until next report.

Northwestern Coal Co., Jno. H. Bovard, general manager. This company owns and is operating two mines near Bevier, both of which have shipping connection with the H. & St. Joe R. R. by spur switches extending from the main track.

Mine No. 7, Fred Wiles, foreman. Mine located one mile south of Bevier. Shaft 55 feet deep; equipped with fair machinery for hoisting. The ventilation is furnished by a 10-foot fan with very good results. I made the first inspection on the 27th of August, 1900, and found the

ventilative volume of air overloaded with work in the 3rd, 4th, 5th and 6th south entries off of the 6th east entry. The continuous opening of doors on the intake of the air at the main wheel road, was causing considerable leakage as the trips passed through, and the company was instructed to make a new air course through that part of the third south entry and change the door on the main wheel road. This prevented the leakage and greatly improved the air; but there were too many men working in that current at that date to ventilate the mine satisfactory. I made another inspection on the 20th of March, and discovered that all the entries had been stopped for some time and all the work confined to rooms and pillars. The mine at this date was operated under a lease by the Murlin Coal Co., which expired on the 1st of April, after which date the property would revert to its owners, consequently the general repair of the mine was not fully kept up, and it was not found in as good condition on this visit as formerly. I made another careful inspection on the 10th of May, and noticed that the present operators had put in two new cages and about 75 new pit cars, airways had been cleaned, ditches and dumps made, roadways corduroyed and entries timbered, and the general condition of the mine greatly improved since my last visit. The ventilation was also stronger and fresher. I made another careful inspection on the 14th of August, 1901, and discovered that all the entries had been started and more men employed. We found on this inspection that entries were driven in the direction of Mines Nos. 1, 2 and 3 which are full of water and long since abandoned. We recommended in view of the condition that every entry going east and north be stopped until the water was taken out of the abandoned mines, which recommendation was strictly complied with. I found the ventilation better than on last visit, and mine in better condition. I visited it again on the 4th of December and found the ventilation satisfactory, and the mine otherwise in good condition. The entries stopped on last visit were still standing, but learned that as soon as the water is taken out of the abandoned mines, all entries will be started, more men will be employed and the output of the mine greatly increased. Coal four feet thick, and worked on the room and pillar double entry plan. The product is shipped and consumed at points west and northwest.

Mine No. 8, George Michaels, foreman. Mine located one mile south of Bevier and connected with the H. & St. Joe Railroad. Shaft 130 feet deep, and equipped with first-class machinery for hoisting. Ventilation is furnished by a 14-foot ventilating fan, and the mine is practically and satisfactorily ventilated. I made a careful inspection of the mine on the 29th of August, 1900, and discovered that the escape-ment shaft had been completed, the communication between the two

shafts made, and a large fan erected on top of escape shaft, forcing and exhausting alternately in summer and winter. I found at this visit that the main entries were driven in a north and south direction and cross entries east and west. The ventilation and general condition of the mine was in excellent shape at this visit. March 21, I visited the mine again, and made another careful inspection, and discovered that the ventilative current was conducted around the south side in three separate currents, and two over-casts being built on that side since my last visit. The first and second east entries off the south have separate currents, and an over-cast had been built over the main south which carries another current to the first and second west entries, while the third current passes over another air crossing and ventilates the third and fourth west entries, the two south, the third and fourth east entries, and preparations were made at this date for another current at the third and fourth west. There was only one current on the north side at this date, but preparation was made to erect an over-cast and divide the current on that side, but the air was good all over the mine. I made another inspection on the 11th of May and found it in excellent condition. I noticed on this visit that stoppings had been built at the necks of all abandoned places which is one of the best methods that can be practiced in a mine to keep the air from getting impure, as the blackdamp accumulating in abandoned places from the refuse of the mine and the decaying of timber and other organic matter coming in contact with the ventilative current will soon vitiate it, making it unfit to breathe. I hope this company will continue to close up airtight every old room and other opening as soon as the same is finished, and that others will follow this example. I made another inspection on the 13th of August, 1901, and found the mine in a satisfactory condition. The entries were found high, wide, dry and clean, and well secured with timber. On the 5th of December I visited the mine again and made a careful examination and found it in excellent condition with the ventilation good and the mine in a fine sanitary and safe condition. The practice of closing up abandoned places was still continued, and the ventilative current was practically fresh on its returns to the up-cast, after it had accomplished its work on its long routes and ventilating 250 miners. I highly commend the management for its practical system of ventilating the mine. The coal is about four feet thick, and worked on the double entry room and pillar plan. The roof is of the soapstone variety, friable and soft, requiring a large amount of timber to keep it secure. Employment is given to about 300 hands in and about the mine. The product is consumed west and northwest.

Kansas and Texas Coal Co., Ed Vail, superintendent. This company owns and is operating two mines south of Bevier, both of which are

connected with the H. & St. Joe R. R. by switches. Both mines are working on the room and pillar plan and on the same seam of coal, which will average about four feet in thickness. Both are shaft openings, and steam power used for hoisting.

Mine No. 61, Jas. Monihan, foreman. Mine located two miles south of Bevier. Shaft 126 feet deep, and equipped with first-class machinery for hoisting. The ventilation is furnished by a 12-foot fan with good results. I inspected the mine on the 28th of August, 1900, and found it in good condition with the ventilation satisfactory. The fan at this date was making 90 revolutions per minute, and was forcing 43,190 cubic feet of air into the mine in same time. This volume of air was divided at the bottom of the down-cast to the east and west, and conducted to the cross entries by the aid of doors. I made a thorough examination of all the air courses on this visit, and found them in a very fair condition, but discovered that there were too many men working in each current of air, and request was made of the company to split the ventilative current into more currents. I visited the mine again on the 22nd of March and discovered that an overcast had been erected over the straight east at the 2nd south entry, thus giving a separate current to the 1st and 2nd south entries. Another overcast was in course of construction over the 4th north entry, which would conduct a separate current to ventilate the two east entries and the 3rd, 4th, 5th, 6th, 7th, 8th south entries, while another current was furnishing air to the 3rd and 4th north and the 1st, 2nd, 3rd and 4th east entries off of the 4th north. The above-mentioned currents are all on the east side of the shaft where the largest number of men were at work. The west side is ventilated by the one current and was found satisfactory at this date. I made another thorough inspection of the mine on the 12th of August and discovered the ventilative current very much disarranged at several points, owing to defective doors, leakages in cross-cuts and curtains used in place of wooden doors. The volume of air entering the mine was found as large at this date as at the former visit, but the doors had been badly neglected, allowing the air to travel where it was not intended to pass. I found curtains hanging on main entries in place of wooden doors, and they were so torn by passing trips as to be no better than strings. The use of canvas doors on principal entries is obviously crude, and impracticable, and should be avoided when possible. All the mines of the Kansas and Texas Coal Co. are well equipped with ventilative appliances for furnishing air currents in its mines and, with the proper care and management, the mines can be kept in a healthy condition, and if a deficiency of air is found in any part of the mine, the cause must be laid to the mine foreman, for he has a sufficient volume of air furnished which, if properly conducted

around the mine, and prevented from waisting, by reason of neglect to carefully guard all doors and stoppings, to answer the demands made upon it. After a current of air is delivered to the bottom of a shaft it is then in charge of the mine foreman (who is there virtually superintendent), to be properly conducted, cared for and distributed to such portions of the mine as it may be needed. He must see that the air courses are high, wide and clean, leaving plenty of area for the air to pass through, that all doors are made air tight, properly hung, shut in the direction taken by the air current, kept in good repair and that every miner in the mine is furnished his full share of air. Without close attention is paid to the above requirements, the efficiency of the fan will avail nothing. On the 24th of December, I visited the mine again and made a thorough investigation of every part of it and discovered great improvements had been made since my former visit. An overcast had been erected over the second south entry on the west side, and the ventilative current divided into two separate currents on that side, and three separate currents on the east side, or five currents in all. New doors had been set in place of curtains, and the condition of the mine, as well as the ventilation, was altogether satisfactory at this visit. The company has put in an electric plant at this mine, which is used to do the undermining. The plant was put in by the Lorgan-Gardener Electric Company of Chicago, Ill., and consists of one 150 horse-power cut-off engine, with a 100 K. W. generator and five electric machines; also has capacity to operate ten machines. These five machines each cut three and one-half feet in width, and two of them cut five feet deep, and the other three machines cut to a depth of six feet. The machines at first were used to drive entries, turn rooms and undermine in all narrow work, but are now used in rooms and their work is very satisfactory. Machine runners are working by the foot, and men are hired by the day to shoot down the coal, and loaders get $27\frac{1}{2}$ cents per ton for loading it. Another boiler has been put in here, which is 24 feet long, by 48 inches in diameter, with one 18-inch flue. I noticed on the last visit that the use of the exhaust well had been discontinued and a heater put in its place, into which the exhaust steam is discharged, and this heater, while saving the exhaust water the same as the exhaust well did, furnishes the water for use in the boilers about 30 degrees hotter than when used from the well. The company has built and constructed 90 new houses, about half way between mines Nos. 61 and 66, during the past year for the accommodation and home of its employes, and have removed several others from some of their abandoned mines. These houses contain 2, 3, 4 and 5 rooms; will average a little over 3 rooms per house. It has also built a large supply store, butcher shop, school house, church and a post office. The houses are built of good material and well furnished. They are all painted in

light colors. The doors, casings and borders are paneled and trimmed in good taste and workman-like manner, giving this new mining town a cheerful appearance. We expect to see Keota (the name of the town and post office) yearly growing as the coal company owns thousands of acres of land in its surroundings, all underlaid by a 4-foot vein of coal, and Keota is located and built in about the center of this mining property and will continue to be a populous, prosperous and a progressive mining town for years to come. The branch switch, formerly operated from Excello to Ardmore, was extended during the past year through to Bevier and connected with the main line of the H. & St. Joe R. R., giving these mines shipping connection at both ends, more yard room and also passing through Keota.

Coal about 4 feet thick and worked on the double entry room and pillar plan. There are about 325 men and boys employed in and about the mine. The product is shipped over the Wabash and H. & St. Joe Railways to points north and west.

Mine No. 66, Robt. Patterson, foreman. Mine located 4 miles south of Bevier. Shaft 50 feet deep, and equipped with first-class machinery for hoisting. Ventilation is furnished by a 12-foot fan with excellent results, and the mine is practically and satisfactorily ventilated. I inspected it on the 29th of August, 1900, and found it in excellent condition, with the air current double the amount required by law, while the fan was only running at a speed of 45 revolutions per minute at the time. The airways were found large, clean and roomy and a strong current of fresh air sweeping around every working place in the mine. I noticed at this visit that preparations was made to divide the air to the different portions of the mine. On the 22nd of March I visited the mine again and made a thorough inspection of same. I discovered on this visit that the ventilative volume of air had been divided into five separate currents, which were ventilating that many parts of the mine. The fan was forcing at this date, and one current traveled from the bottom of the downcast to the east side, and another current was furnishing air to the 1st, 2nd, 3rd, 4th west entries, while each of the three sets of north entries were ventilated by a separate current of air, and it is the intention of the foreman of this mine to give a separate current to each set of entries, and the operation of the mine is carried on so as to accomplish that end; in order to do this, an overcast will be built at the intake of the air over the return entry for the current to pass over, and after making its rounds and furnishing the required amount of air to the two entries, the current returns and unites with the return air to the upcast.

I visited the mine again on the 12th of August and made another inspection with satisfactory results. I discovered on this visit that two more overcasts had been constructed and the ventilation was perfect.

There is now eight distinct and separate currents of air in the mine, which does away with the use of a great number of doors, and not a curtain was visible anywhere below. I consider this the most practically ventilated mine in the State. I visited it again on the 24th of December and found the condition of the mine good and the ventilation satisfactory. I noticed that the double track had been extended on the west side from the shaft bottom to the 5th and 6th southwest entries. The pit head had been raised and remodeled, a self dumping cage had been put in, a hopper, a hopper scale, shaker screen and a Phillips box car loader erected, the gravity screens enlarged to 7 feet by 20 feet, and a house built, covering the screens and loader house, thus protecting the car trimmer from the weather. Coal from 4 to 5 feet thick and worked on the double entry room and pillar plan. From 225 to 250 men and boys employed in and around the mine.

Murlin Coal Co., W. E. Murlin, president and manager; Jno. P. Davis, foreman. This company is now operating two mines in the vicinity of Bevier, having recently purchased mine No. 2 of the Watson Coal Co. Both mines have shaft opening and are equipped with machinery, are working the same seam and under the same management.

Mine No. 10 is located about one mile southeast of Bevier on the Richards farm and has a territory of two hundred acres of coal to work out, being the last unworked piece of coal adjacent to Bevier, and, therefore, the closest mine to that little city. Railroad connection is obtained by a switch 5,000 feet in length, extending from the main track of the H. & St. Joe R. R. to the mine. Shaft 140 feet deep and equipped with first-class machinery. The engines were made by William Ellison & Son Manufacturing Co., St. Louis, Mo. Cylinders are 16x24 inches, connected direct to a 6-foot drum. The machinery is set on solid rock foundation and enclosed by a substantial engine house. The steam is furnished by two boilers 20 feet long and 48 inches in diameter, with twelve 6-inch flues, five-sixteenth steel shell, fully equipped and made by Wangler Boiler and Sheet Iron Works of St. Louis. The Bond self-dumping cage and weigh hopper is used, having a capacity for handling eighteen hundred tons of coal in 8 hours, and is considered the safest, most complete and economical dumping apparatus now in use. The Bond box car loader is also used at this mine, with capacity for handling two thousand tons of coal daily, installed for the purpose of loading box and stock cars, outside of the self-dumping cage. The mechanical loading of closed cars is the greatest stride in coal loading and handling of recent years. The Monarch, 6x14 foot platform, six ton top scale, is used and is considered the standard scale for self-dumping cages. A fifty-six foot Fairbank track scale is located on railroad track for weighing empty and loaded cars.

The engine and boiler house is under one roof, a building 50x50. Each compartment divided by proper partitions, with work shop in rear of engine room. Blacksmith and repair shop is 20x40 feet, and fully equipped with all necessary tools for making and repairing the equipment of the mine. The head house is twenty-six feet wide and fifty feet long over all, with sheave wheels fifty feet above the surface landing. The frame work is of the latest improved method. The member posts are made of two pieces of 4x12 inches for head house, and three pieces of 4x12 inches for tower posts bolted together, being used in place of the solid post of 10x12 or 8x12 inches as in the old way; the advantage being greater stability with less material. Head house and all buildings are covered with fire-proof roofing.

The sinking of shaft and building of switch was begun December 10, 1900, was completed and the shipping coal commenced on the 1st of March, 1901. A good record, when it is considered that all construction was done during the winter months. By the 1st of May main entries were driven and cross entries started on each side of shaft, and by the latter part of said month a connection was made between the two shafts and the mine had an output of two hundred tons a day. The main shaft is 7½x14 feet in the clear, with three compartments, etc. The sides are timbered with 3x6 inch white oak, and the ends with 6x6 inch white oak, and the two rows of buntings 6x6 placed edgewise. The escapement shaft is 7x10 in the clear, with manway 3 feet wide in one end, separated by solid partition and equipped with winding stairway, leaving an airway 7x7, which is equipped with a 12-foot Crawford & McCrinnon fan. Air shaft is located three hundred feet from main shaft. The ropes, cages, safety catches and all safety appliances are new and of modern improvement. I made a thorough inspection of the mine on the 14th day of August and discovered that an underground connection had been made between the two shafts and a permanent system of ventilation adopted. The ventilative volume at this date was divided into three separate currents, but as the mine is new and not extensively developed, further improvements will be made in the ventilation as the mine advances. It is worked on the double entry room and pillar plan, with double track haulage roads. The workings so far are dry and promise to continue so. The coal is of excellent quality, overlaid with good roof. The aim and desire of the management of this company has been to equip this mine in the very latest and most improved method with the view of a large output handled in the most economical and safest manner. The mine had an output of 400 tons per day at date of this visit and was increasing daily. I made another thorough inspection on the 23rd of December and found the mine in good condition and the ventilation very satisfactory. I noticed that

great progress had been made in the opening of the mine since last inspection. I found about 175 men at work at this date, and the output from six to seven hundred tons a day, and it is within reason to state that if the mine had not encountered so much low and faulty coal, it would be producing a thousand tons a day at the last date. Coal shipped to market over the Hannibal & St. Joe Railroad.

Mine No. 12 is located one mile south of Bevier and is connected with the H. & St. Joe Railroad by a spur switch extending from the main track to the mine. The shaft is 85 feet deep and equipped with first-class machinery to hoist the product, ventilate and drain the mine. A 12-foot fan furnishes the ventilation with satisfactory results.

This mine was formerly operated by the Watson Coal Co., but was recently purchased by Mr. Murlin, who now operates it.

I visited the mine on the 27th of August, 1900, and found it in good condition. The ventilative current has a long circuitous route to travel, full of bends and angles, but the volume of air delivered into the mine is of sufficient quantity to furnish plenty of air to properly ventilate every part of it. The air courses are large and roomy, furnishing plenty of area for the current to travel around the mine without rubbing or encountering any friction points. I noticed that the air current is conducted direct to the miners, clean, strong and fresh and did not encounter any impurities until it accomplished its work, left the miners and returned to the upcast.

I made another inspection on the 21st of March and found the ventilation as well as other conditions of the mine fully satisfactory.

I visited it again on the 15th of August and found the ventilation good. I discovered on this visit that the main west entry had struck low coal and was stopped and the last set of north entries had been started. The indications at that time were that the mine would be worked out inside of a year, but since the present operators have taken charge, they have purchased more coal property, opened out new works and the mine is more productive than ever before and will continue so for years. I made the last inspection of it on the 23rd of December and discovered a pair of entries had been started in the new territory, they were being driven north and will soon connect with the west entry lately driven by the former operators. This will be used as an air course and will greatly shorten the route of the current, enlarge the volume of air and take it fresher to the miners. I found the air fully satisfactory at the new opening at this date, but the current was weak and very impure in the old workings. Great improvement was made by closing break troughs and brattices and making all stoppings perfectly air tight. Coal 4 feet thick and worked on the double entry room and pillar plan. About 80 men

employed. Ropes, cages, safety catches, covers and all safety appliances found in a safe condition. Product shipped over the H. & St. Joe R. R., west and northwest.

Watson Coal Co., Wm. Watson, president, and Wm. Rivers, superintendent. Mine located one mile northwest of Bevier and has shipping connection with the Hannibal & St. Joe Railroad by a switch 7,000 feet long, extending from the main track to the mine. Shaft 156 feet deep and equipped with first-class machinery. This is a new mine sunk and equipped in the spring of 1901. Coal was struck at the above-mentioned depth, but, unfortunately for miner and operator, the coal proved low and faulty and thousands of feet of entry had to be driven before a workable thickness was reached.

The failure to find the coal in workable thickness at this mine caused a great loss to the company as well as a disappointment to the community; as the plant is equipped with all modern machinery with the intention of making the mine one of the greatest producers in the State, and neither skill or money was spared to accomplish that end. The engines were built by the Keystone Iron Works Co. at Kansas City, Mo. The cylinders are 16x30 inches, connected to a 6-foot drum, working on first motion. Two two-flue boilers generates the steam. They are 20 feet long and 40 inches in diameter. The machinery is set on good rock foundation and enclosed by a substantial brick house. The cages were made at the mine by the company's blacksmith. They are strongly built and are equipped with the best safety catches now in use, the invention of a blacksmith, who made the cages, self-dumping cages, a hopper scale and a shaker screen is also a part of the equipment of this plant. Everything is new and embraces all of the modern improvements. The shaft is 7x14 feet, separated into cage ways. An escapement shaft was sunk at the same time as the hoisting shaft and a stairway erected in it which will be used exclusively as an avenue of escape for the men to come out in case of an accident to main shaft. An air and a fan shaft was also sunk at the same time and a 15-foot fan set on top of same, which is enclosed by a good house. To avoid height and assist the efficiency of the fan an excavation 7 feet deep was made and a substantial rock wall built from the bottom, 8 feet high on top, of which the fan rests. The fan house and casing is so constructed as to allow the fan to force or exhaust as the requirements of the mine may be. I made the first visit to the mine on the 11th of May and found the work confined to driving entries through the faulty coal, which work was pushed night and day. On the 15th of August, I visited it again and discovered that the two south entries had advanced about 600 feet and were getting into better coal, but was still low and faulty. On my tour of inspection of the mines of Bevier during

the month of December, was informed that the coal was no better and the company was about tired of spending any more money; that the company contemplated the abandonment of the mine and seeking a new field. We regret exceedingly the disappointment and failure of this company after observing the extra effort made by it to open a mine which would not only have been a great producer, but a credit to the coal industry of the State. The selection of such a splendid plant and the expenditure of so much money it seems to us was deserving of much better results.

The Watson Coal Company is the oldest coal company in the State, and its management one of the most practical, and heretofore has been very successful. Mr. Wm. Watson, president of the company, is now about 70 years of age, has followed mines and mining all his life and elevated himself from the pick to his present position and standing, through his energy, honesty and business qualifications. He is practical, conservative and fair, liked and honored by all his employes, as well as all those who come in contact with him in a business transaction or otherwise, and the writer sincerely hopes that the next move of this company will be more successful for the good of the company, miners and the community in general.

Lingo Post Office.

The Helmet Mining Company, D. Finnell, manager; Chas. Parker, foreman. Mine located at Lingo and connected with the H. & St. Joe R. R. Shaft 135 feet deep and operated by machinery. A 12-foot fan furnishes the ventilation on the north side, while a furnace provides air on the south side. I inspected the mine on the 31st of August, 1900, and discovered that the air shaft sunk on the south side since my last visit had been completed. The connection made with the inside workings and a small furnace built, and the ventilation at this date was very satisfactory on the south side. That side of the mine had been abandoned for 18 or 20 years, the former operators having worked out all the coal property they owned. When the present operators took charge of the mine they purchased more coal property and began the opening of new works on it. The south side is now well timbered and practically opened out.

I found the ventilation on the north side as usual, sufficient in quantity, but very much vitiated with heat and impurities. The ventilative current at this date was traveling around the face of the workings in one undivided current, furnishing air to about 50 men. The mine is very dry, and the refuse stowed away in the gobs gets hot at times and the heat coming in contact with the air causes it to sweat and crumble and having a long route to travel gathers all the impurities of the mine

on its journey. Spontaneous combustion often takes place in the gobs, creating an unhealthy as well as a very unpleasant atmosphere for the miners to work in. We recommended that the company put down another air shaft on the north side at the face of the workings, that the same be used as a down cast, and that the air be conveyed direct from it to the miners, as the following letter explains:

Jefferson City, Mo., Sept. 5, 1900.

Helmet Mining Co., Kansas City, Mo.:

Gentlemen—On the 31st day of last month I made a careful inspection of your mine at Lingo, in Macon County. The mine was found in a satisfactory condition, with the ventilation fully up to the requirements of the law. When we take into consideration that it is the oldest mine in the State now in operation, its general condition is very good. The improvements, such as cleaning, timbering and the laying of new and heavy rails on the south side, has greatly benefited the mine; these things, in connection with the sinking of a new air-shaft on the same side, under systematic management, will secure the required amount of air for properly ventilating that side so that from 125 to 250 men can be comfortably worked.

My information is to the effect that you intend to increase the output of the mine until the present product is doubled. This will necessitate a larger number of miners and require a largely increased volume of air. The required amount of air cannot be furnished the north side without enlarging the area of the fan shaft, or your present up-cast, both of which appear to be tested at the present time to their fullest capacity in furnishing the air now needed on that side. The fan shaft has now only 10 feet of area, and to ventilate 200 men, 6 mules and cover the worked-out territory, a volume of air of not less than 25,000 cubic feet per minute will be required to circulate through the mine to keep it in good sanitary condition and comply with the mining laws. To supply the amount of air needed through a ten-foot area, the volume of air would have to travel at a speed of 2,500 feet per minute, or about 26 miles per hour, and it will require a propelling force of four pounds on every square foot to attain that velocity.

I would suggest to you that you sink another air shaft on the north side in the most convenient and suitable location, to ventilate the work and remove the fan from its present location and set it up at the new air shaft. This arrangement, I think, would prove the most practical and satisfactory method of ventilating the mine. Your mine requires more air in circulation than in ordinary mines, for the reason that spontaneous combustion occurs in the refuse, or gobs, and thus causing the temperature to rise, which is not only injurious to the health of the

miners, but very unpleasant as well. It will be impossible for you to ventilate many more men than you have at present on the north side without provision being made for a larger volume of air to enter the mine, and hope you will see your way clear to follow the suggestions made. I have also to call your attention to the pit head and top building; the timber in each are much worn and decayed. Would further suggest that all timber in the pit top be taken out and new timber substituted for the safety of all concerned.

Very respectfully,
CHAS. EVANS,
State Mine Inspector.

Before we made another visit to the mine the following letter was received from Mr. Finnell, the manager, and it was a very welcome letter, indeed:

Lingo, Mo., February 7th, 1901.

Mr. Chas. Evans, State Mine Inspector, Jefferson City, Mo.:

Dear Sir—If you are up this way again soon would be pleased to have you call and look over the mine and note improvement made in ventilation, haulage roads, etc. Since your last visit we have sunk the new air shaft suggested by you, making a downcast of same, thus giving the miners the benefit of pure air at the face of the work. Think we can safely say that our mine is now as well ventilated as any in the State.

Are now working about 125 men and working every day.

Hope soon to be in shape to carry out your suggestions in regard to new pit head and top works.

Yours truly,
D. FENNELL.

My next visit to the mine was on the 1st of May, when we discovered that another air shaft had been sunk on the north side near the face of the workings, which was used as a down cast, and we also discovered the volume of air was divided into three separate currents. The foreman of the mine had prearranged a system of ventilation for the future which, if properly carried out, will prevent any further deficiency therein. As soon as the air shaft struck through, the temperature dropped 60 degrees at the bottom of it, and those working in the immediate surroundings of the new air shaft had to wear their coats and gloves during the cold months, while previous to this every miner working in the mine worked without a shirt on. The ventilation at this date was stronger, fresher and purer than on any previous visit, and was very satisfactory. The air on the south side was also good. I noticed on this visit that the wheel roads had been reconstructed, the track relaid with heavier rails, the entries retimbered, and while it is the old-

est mine in the State now in operation, it is also one of the best ventilated. I made another inspection on the 17th of August and found the ventilation and all other conditions around the mine satisfactory. On the 30th of December I visited it again and I found the air and inside workings in a satisfactory condition, but we were dissatisfied with the pit head and top buildings, which are old, rotten and in a dangerous condition. We requested the company to reconstruct and rebuild the whole structure with new material. The coal is about 4 feet in thickness, but there is a bench rock from six to ten inches thick within a foot of the bottom running regular throughout the mine. It is worked on the longwall plan. From 125 to 150 men and boys employed. The product is consumed by the proprietors of the mine, the Armour Packing Company at Kansas City.

There are quite a number of local mines operated throughout the county during the fall and winter to supply home demand, and all particulars concerning them will be found in the statistical table of Macon county, embodied in this report.

MONTGOMERY COUNTY.

Wellsville Post Office.

Very little mining is now being done in this county, although the coal seam runs under the whole county; yet it is low, irregular and faulty. The few mines operated here during the past year are located in the surroundings of Wellsville and were worked during the winter months to supply home demand. Name of operator and output of each mine can be found in the statistical table of the county in this report.

MONROE COUNTY.

The mines operated in Monroe county during the past year are located near Paris. The Coal seam is about 18 inches thick, and the mines are worked only a few months in winter to supply the local demand. This seam crops out on the hillside and the mines are entered by drifts. Further information will be found in table of this county.

MORGAN COUNTY.

Hubbard & Moore operate a strip mine near Versailles. The coal is about 50 feet in thickness and mixed, of the cannel and bituminous varieties. This is a coal pocket, or an isolated deposit of coal which occurred below the margin of the coal measure area.

Thirty-six years ago, when the writer first came to this State he started to work in one of these pockets at Elston, in Cole County, and the product of the mine at that time was hauled from the mine to the railroad at Elston station and was consumed by the Pacific Railroad Company on their engines. Two-thirds of the coal production of the State at that time was taken from coal pockets, which were extensively worked in Cole, Cooper, Miller, Moniteau and Morgan counties, and a large number of isolated coal deposits still remains undiscovered, but since the regular coal seams of the State have been so developed and large mines opened out very little attention is now given to coal pockets.

NODAWAY COUNTY.

Production, 2,000 tons.

Quitman Post Office.

Mining has been prosecuted in the vicinity of Burlington Junction and Quitman for a great number of years, but only in a limited way to supply home demand. The coal seam is thin and varies in thickness from 14 to 20 inches. The mines are entered by vertical shafts, varying in depth from 20 to 72 feet, and the product is hoisted out by horse power. All other information concerning parties operating mines in that locality, and output of same, will be found in the table of the county in this report.

PETTIS COUNTY.

Hughesville Post Office.

George Menefee is now operating the Carson mine. This mine is located two miles from the depot, and the coal is taken away in wagons. The mine is entered by a vertical shaft 65 feet deep, and the product is hoisted by steam power. Coal 34 inches thick and worked on the room and pillar plan. About 10 men employed in winter and 4 in summer. Product consumed at Sedalia and vicinity.

Lamonte Post Office.

Shanks & Carson Coal Company. This company has opened out a mine lately two miles east of Lamonte on the Mo. P. R. R. They have sunk a shaft and struck 24 inches of coal at a depth of 50 feet, and intend to operate the mine on the longwall plan and haul the coal in wagons to Sedalia, as there is no railroad connection.

PUTNAM COUNTY.

Production, 218,862 tons.

Putnam county is ranked among the large coal producing counties of the State, and shows an output of 218,862 tons during the past 18 months (this report covering that period). The principal mines of this county are located at Blackbird, Mendota and Unionville, although there are smaller mines in operation at other places, but their output is very small, and are operated only during cold weather to supply home trade. The county is largely underlaid with an excellent vein of coal which crops out in the hillsides, and the mines are easily operated by drifts. There are other workable veins of coal underlying this one, which has been discovered in the eastern portion of the county, which are 20 inches and 26 inches thick respectively. This coal underlies, we believe, the entire county, but will not be worked likely so long as the seam of coal now mined lies so convenient for operation. The mines of this county are properly operated, mostly dry, safe and healthy. During the period covered by this report 218,862 tons of coal were mined, the product of 16 mines employing on an average 698 men and boys in and around the mines. For the detailed information relating to the respective mines, see table of this county, and the following for the description, location and condition of the same.

Blackbird Post Office.

Blackbird Block Coal Co. Sam Moss, superintendent. This company is now operating two mines at Blackbird, both of which have shipping connection with the C., B. & Q. R. R. Mine No. 1 is a shaft 53 feet deep, and equipped with steam power for hoisting. Ventilation is furnished by a 12-foot fan, which was giving very poor results, considering the capacity of the mine as compared with the size of the fan; this is caused by small and choked up air courses. We have been familiar with the underground work of this mine from its start, and its former superintendent has received from us much good advice, especially with reference to a proper any systematic system of ventilation, impressing upon him the necessity for keeping his air courses clean; but all efforts of ours appears to have been to no purpose, as he (Mr. Wm. Love) went ahead in his old way, never heeding until at last he was forced to give up. Since then there have been several persons in charge of the mine, who have done their best with it.

I made an inspection on the 26th of October, 1900, and found the ventilation better than on former visit. In fact, it was satisfactory to the few men employed. The present foreman had cleaned up some airways and set a few doors, which left the mine in fair condition. I visited the mine again on the 3rd of May and found it idle; hence no inspection. I returned on the 8th of November and discovered the method of mining had been changed from the room and pillar to the longwall plan, and found the ventilation rather weak and sluggish, while there was no deficiency discovered, yet the current was hardly up to the requirements of the law. The mine makes considerable water, keeping the roadways wet and muddy. Coal 33 inches in thickness, with clay parting running through it from 2 to 3 inches in thickness; 40 men employed, and 83¾ cents paid for mining. Product consumed at St. Joseph and northwest.

Mine No. 2 is a slope opening and the coal is brought to the surface by machinery. It is located ¼ of a mile southwest of Mine No. 1 and the same coal seam is worked at both mines. This is a new mine opened out and equipped during the past summer, and at date of my visit, Nov. 8, preparations were being made to commence shipping coal. An air shaft had been sunk, but no underground connection had been made at this date and a permanent system of ventilation had not been adopted. Both mines are under the same management.

Mendota Post Office.

Mendota Coal Co. F. B. Ketchum, president, and B. H. Johnston, superintendent. This company owns and is operating two mines in the surroundings of Mendota, and both have shipping connection with the C., B. & Q. R. R. by a spur switch extending from the main track to the mines. The same coal seam is worked at both mines, which is from 32 to 34 inches in thickness, separated into two layers by a clay band from one to two inches thick running regularly below the center of the coal. The roof that lies over the coal is a hard lime rock, but there is a layer of black slate from 8 to 12 inches directly next to the coal which makes the conditions for both coal and roof well adapted for longwall or room and pillar methods of working, and both plans are practiced in one of the mines. Where the room and pillar system is practiced the entries are driven double with cross-cuts at intervals of 50 feet apart, and double rooms are turned off each entry and carried 40 feet wide, with a wheel road on each side and two men in a room. The air is conducted in on one road around the face of the room and out the other, proving a

satisfactory as well as a practical way of ventilating. Wooden doors are set at entries and at the mouth of rooms and great care is taken of the ventilative volume of air to have it properly arranged and conducted in sufficient quantity to the miners. Both of these mines are dry, safe and clean; are properly operated and practically ventilated.

Mine No. 2. Wm. Tippitt, foreman. Mine located two miles east of depot. It is a shaft 63 feet deep and equipped with first class machinery for hoisting. The mine is ventilated by a 12-foot fan, which was giving satisfaction at dates of inspection. I inspected the mine on the 27th of October, 1900, and found it in a very fair condition, with the ventilation good all over the mine with the exception of a few rooms in the longwall work on the west side, where preparation was made to secure an outlet for the return of the air on the north entry. The air on the east side and all the work off the south entry of the east was entirely satisfactory. Indeed, I noticed several improvements which had been made for the betterment of the ventilation since my former inspection by resetting doors, cleaning air courses, filling up abandoned cross-cuts and making all stoppings air tight. I made another inspection on the 4th of May and found the ventilation satisfactory in every part of the mine; an outlet for the return air had been made on the west side, making the air good in the longwall workings. I discovered the current stronger on the east side and on investigation found that the air course between the straight east and the first off of the north entry had been cleaned and enlarged, causing a larger volume of air to pass through, and as this air course is intended for the return of the air that is conducted through the east side, the whole mine on that side was greatly benefited by the enlargement of said air course. Another careful inspection was made on the 7th of November with satisfactory results. I discovered that considerable improvement had been made in the ventilation since my last visit by cleaning and enlarging airways and shortening the route of the air currents. I found the volume stronger, larger and fresher at the face of the workings than even on my last inspection. I also discovered that an east entry was driven on the east side off of the first south entry to connect with the third south entry off of the straight east, which will shorten the route of the current 1,000 feet when through. A west entry was also in course of construction from the second south entry on the west side to connect with face of the longwall work for a permanent intake of the air for the longwall workings, and

when these connections are made the ventilation at Mine No. 2 will be perfect. Every effort is made by this company to comply with the mining laws and to operate its mines with a view to safety and the health of its employes. There were 105, 125 and 165 miners employed respectively at dates of inspection, besides 11 mules and 15 day hands. Coal taken to St. Joseph and points north and north-west.

Contract Mine No. 7 is operated by S. Medlin and is located about one mile southeast of depot. Mine entered by a drift and ventilated by a furnace. This is a new mine opened out during the past year. The coal seam is the same as that worked at the other mines around Mendota, and the mine operated on the longwall system. There were 23 men at work at date of inspection. The product is taken to market over the C., B. & Q. R. R. $83\frac{3}{4}$ cents per ton is paid for mining run of mine coal.

Contract Mine No. 9 is located $\frac{1}{4}$ of a mile west of the depot and is operated by the Arnold Bros. Mine entered by a drift and ventilated by a furnace. This also is a new mine opened out last fall and it had 18 men employed at date of my visit, November 6th. Thickness of coal is the same as that at other mines in this locality, and the mine will be operated on the room and pillar plan. The coal at present is hauled from the mine in wagons, but a switch will be built by the C., B. & Q. R. R. from main track to the mine.

Mine No. 8. Ed McCullom, foreman. Mine located half a mile southeast of depot, and connected with the railroad by a spur switch. The mine is entered by a drift and ventilated by a furnace with excellent results. I made the first inspection of this mine during the past year on the 27th of October, 1900, and found it in a satisfactory condition, with the ventilative current double the amount required by the law, and which was properly conducted around the workings. I made another inspection on the 3rd of May, 1901, and found the mine in good condition and the ventilation satisfactory. I visited the mine again on the 6th of November and made a thorough inspection, and as on all former inspections found it in good condition, with every feature satisfactory. I found the air courses large, clean and roomy; all doors set at proper places, well hung, kept in good repair and trappers employed to attend same. All entries are high, wide and clean, with good wheel roads, all laid with a heavy rail, making this a first class mine in every respect, and the greatest of care is taken by the foreman to keep it in first class order. Driving entries and all other necessary improvements in and around the

mines of this company is done during the slack times in summer, and when the fall and winter trade opens the mines are in condition to put in men and supply the demand. Coal 33 inches thick and worked on the room and pillar plan. About 90 men employed, and 83¾ cents per ton paid for mining.

Rodgers Bros. Coal Co. Mine located ½ mile northwest of depot. It is a drift opening and the ventilation is furnished by the aid of a furnace with poor results. I discovered on my last visit that the airways had been choked up with dirt, thus retarding the air current. The company was requested to clean them up and secure by proper methods better air in the mine. Coal 33 inches thick, and worked on the room and pillar plan. About 20 men employed, receiving 83¾ cents per ton for mining. Coal taken away from the mine in wagons, loaded on cars at switch and shipped over C., B. & Q. R. R.

The Star Coal Co. is operating a mine in the same locality. It is entered by a drift and ventilated by a furnace; the same seam is worked here as in the other mines around Mendota. About 10 men employed.

There are 10 or 12 other parties in the surroundings of Mendota operating small mines during the fall and winter to supply local trade. The coal seam underlies nearly the whole county and crops out on the hillsides and apparently every farmer has a coal mine on his farm, and never goes to town in cold weather without taking a load of coal with him, and hundreds of tons of coal is thus taken out without a record being made.

Unionville Post Office.

Standard Coal Co. C. E. Dodge superintendent. Mine located 1½ miles north of Unionville, and connected with the C., B. & Q. R. R. Shaft 110 feet deep, and equipped with good machinery for hoisting. The ventilation is furnished by a 10-foot fan with good results. This mine was formerly known as the Emporia Coal Co., and was bought by the present operators some time during the past summer, and is now operated more successfully. On my regular tours of inspection to the mines of Putnam county I made two visits to this mine and found it idle; the men were on strike for their pay; but that trouble is over since the present operators took charge. The method of mining is also changed from the room and pillar to the longwall plan, which, we think, is a mistake and that it will prove a failure on account of faulty coal and shallow covering, and that the company will find its error after some expense. The venti-

lation was rather slack in parts of the longwall work at date of last inspection, November 8th, but preparation was being made to connect the straight west with the north off of the west, which, as soon as through, will shorten the route of the current 2,000 feet and the air then will be satisfactory. The same seam is worked here as at all mines in this county; 40 men employed. The product is shipped north and northwest.

RANDOLPH COUNTY.

Production, 432,655 tons.

This is one of the largest coalproducing counties in the state, ranking third in the order of output, having advanced from fourth place within the year.

Coal is known to underlie, and in fact mining has been prosecuted, in its every township, but active operations are confined to the territory bordering the Chicago & Alton, M., K. & T. and Wabash railroads. While millions of tons have been transported over the above named railroads to distant markets, yet the body of coal remaining is so extensive by comparison as to make the amount taken out appear trifling. With its four (4) feet vein of coal covering so extensive an area, with the number of new mines opened each succeeding year and the extensive improvement and enlargement of its older mines, the revenues from this industry must continue to increase year after year for a very long period of time.

The 432,655 tons of coal mined during the year sold on an average at the mines for \$1.11 per ton, making the value of the output \$480,745. In producing the above amount 20 mines were operated and employed throughout the year an average of 895 men and boys in and about the mines.

Following will be found a description of the respective mines, together with their condition at dates of inspection:

Elliott Post Office.

Elliott Coal Co. J. C. Fleming, manager and superintendent. This company owns and is operating 3 mines in the surroundings of Elliott, all of which have shipping connection with the M., K. & T. R. R.

Mine No. 3. J. Deholder, foreman. This mine is located at Elliott. Shaft 145 feet deep, and equipped with good machinery for hoisting, and the ventilation furnished by a 12-foot fan. Four inspections were made of this mine since the last report was issued,

and it was found in a very fair condition at each inspection. I made the first inspection on the 18th of October, 1900, which date I discovered that men were at work cleaning out what is known as the Renick entry with a view to making a connection with the workings on the south, which will shorten the route of the air and make it fresher and stronger. I found the ventilation on the southeast part of the work very good and the general condition of the mine was satisfactory. April 4th I made another inspection and found that all the work on the north side had been stopped and the men put to work on the south side. The connection had been made between the Renick entry and the other part of the workings from the south: the air courses had not been fully widened out at this date, but the ventilation was better than on the former visit. The face of the work was in better condition on this visit than any former one, as I could walk along the face without a check, thus giving an open way for the air to travel in, and proving very satisfactory. The hoisting ropes, it was noticed, were badly worn in a few places and the attention of Mr. Fleming was called to the matter. He replaced them with new ropes at once, and at the same time put on new springs and repaired the safety catches. I visited the mine again on the 23rd of May and found it in excellent condition.

On the 3rd of October I visited the mine again and found the ventilation good and the safety appliances in good working order. and the general condition of the mine satisfactory. Coal 4 feet thick. and worked on the longwall plan. From 80 to 100 men employed. The product is consumed by the M., K. & T. R. R. Co.; 10 chutes have been erected at the mine to coal engines.

Mine No. 4 is located about 3 miles southwest of Elliott, and about same distance west of railroad. The coal is hauled to the railroad from the mine over a tramway by a small locomotive and pulled over a trestle by machinery, dumped into cars and shipped over the M., K. & T. R. R. The mine has a drift opening, and the ventilation is furnished by a furnace. I made 4 inspections of the mine since last report was issued, namely, October 20, 1900, April 17, May 24 and on the 2nd of October, and found it in good condition at each inspection, with the ventilation satisfactory. The coal varies from 4 to 5 feet in thickness, and worked on the double entry, room and pillar plan. It is overlaid by an excellent shale roof, easily secured by timbering. Employment is given to 60 men, and 60 cents per ton is paid for mining unscreened coal. The product is mostly used by the R. R. company.

During the latter part of the year 1901 this company sunk an-

other shaft $\frac{3}{4}$ of a mile southwest of Elliott and about the same distance north of the railroad and equipped it with a new plant, embracing all the modern improvements. The sinking of shaft, building of a switch about 6,000 feet long to connect with the M., K. & T. railroad and the construction of pit head, weighhouse and the setting of machinery was commenced about the latter part of September, 1901, and by the 1st of January, 1902, the mine commenced to hoist coal. The shaft is 135 feet to the coal, and curbed with 3 inch by 10 inch white pine. It is 7 feet 6 inches wide by 15 feet long, partitioned off into 3 compartments, one of which is used as a temporary air chamber, while the other two are used for cageways. We discovered that guides were built of 3 thicknesses of 2 by 6 inch, white pine, which makes a smoother guide and less liable to warp, or joints to become loose than the solid timber. The hoisting machinery consists of a pair of engines built by the Ottumwa Iron Works of Ottumwa, Iowa, with twin cylinders 14 inches in diameter by 30 inch stroke, connected direct to a $4\frac{1}{2}$ foot iron drum. This drum is all in one with 7-foot face, having a powerful post-brake in the center which is operated by a treadle and is capable of holding the engine and its load against a full head of steam.

Steam is furnished by two boilers, one of which is 18 feet long by 60 inches in diameter, with 46 four-inch tubes and a full front 11 feet high with a 50-foot smoke stack; the other boiler is 16 feet long and 40 inches in diameter with two 15-inch flues, breech front and 30 feet smokestack. Both boilers were built by the well known firm of John O'Brien of St. Louis. The steam connection from these boilers to the engine passes through the ceiling and floor of the engine room and a globe valve is placed within easy reach of the engineer to be used in emergencies. An automatic lubricator and a steam gauge is also set on this pipe inside the engine room. The exhaust steam from the machinery is conducted into a condensing well, from which it is used again in the boilers, which not only disposes of the blinding volumes of steam, but saves one-third of the amount of water required, besides making a great saving in fuel. The machinery is all set on solid rock foundation and enclosed by a convenient and commodious building. The engine and boilers are under the same roof and are in the same house, which is in the shape of the letter T. The whole building is 44 feet wide by 66 feet long, partitioned off into separate compartments. The boiler house is 24 feet wide by 36 feet long, and the engine room is 20 by 30 feet, with 10-foot ceiling and entirely separated from the boiler room by par-

tion. A blacksmith and a machine shop are also provided at the mine and equipped with power punch drill press, cutter saws, forges, formers for pit car iron, and all other tools necessary to keep up the repairs of the mine and the machinery. The smith shop is 16 by 20 feet, and the machine shop 16 by 22 feet. All buildings are covered with magnesia flexible cement, a fire proof composition prepared by the Phillip Carey Manufacturing Company of St. Louis, Mo., and painted with asbestine, also considered fire proof. The pit head or tower upright posts are framed each of one solid piece 56 feet long. The tippie is framed of 10 by 10 inch white and yellow pine, and the dumping and screening arrangements rest on solid rock foundations. The head house is 30 feet wide at bottom, battered to 20 feet wide at coal landing and is 55 feet long. The height of pit top from ground to coal landing where coal is dumped is 32 feet, 51 feet from surface to the journals of the pulley wheel and 60 feet to top of tower. The coal is discharged from automatic cages into a hopper pocket which is suspended from scales overhead by six one-inch rods. Here the coal is weighed and released into the gravity screens by a foot treddle operated by the weighman. The hopper is 12 feet wide at upper end, tapering to 7 feet at lower end. There is a trap door constructed at the bottom of the hopper which can be rased by the topman to let dirt through to be dumped into a dirt car which can be run under it; this is one of the fuits of the inventive mind of Mr. Fleming, the superintendent. These screens are so arranged that lump, nut, steam, slack and mine run grades can be loaded separately, and three tracks are provided for the different grades. The screens are so arranged also that mine run is made by dropping two steel doors over the larger bars, thereby passing the entire box of coal over into the car on the outer of scale track. The steam is made by hooking up a small sheet at foot of nut bars so that the nut is turned back into the slack car, or if this sheet is turned down the nut will pass into the nut car, and the plain slack will run into the slack car. The cages were built by the Ottumwa Iron Works, are strongly made and equipped with the latest improved safety catches. The hoisting ropes are one and one-eighth inches crucible steel, made by the Brodrick & Bascom Rope Co., and the sheaves are made of solid cast with deep grooves lined with wood and are 54 inches in diameter. The escapement shaft was down 110 feet at time of writing these remarks. It is 5 feet wide and 12 feet long, located 325 feet from hoisting shaft, and as soon as it is completed it will be separated into two compartments, one of which for the air passage way proper, will be 5 by 8 feet, and a stairway will be built

in the other compartment. A 12-foot ventilating fan will be erected on top at once. Very little mining had been done at the mine up to the time of this writing, but as far as the entries are driven the coal runs level and uniform, averaging about 4 feet in thickness, overlaid with sandy soapstone and underlaid by the usual fire clay. The mine will be operated on the double entry, room and pillar plan, and as planned and equipped we expect to find it a great factor in the coal production of this county in the near future. We will be able now, after having minutely described the equipment, more fully describe the inside workings in the next report. Robt. Moss, foreman.

Higbee Post Office.

Higbee Coal Company. Wm. Walton, manager and superintendent. This company owns and is operating two mines in the vicinity of Higbee, both of which have shipping connection with the Chicago & Alton railroad. Both mines are working the same seam of coal, which varies from 3 feet 6 inches to 3 feet 10 inches in thickness. Both are shaft openings, and steam power is used for hoisting at each mine.

Mine No. 1. Hiram Hyde, foreman. Mine located $\frac{1}{4}$ of a mile west of Higbee. Shaft 170 feet deep, and ventilated by a 10-foot fan. A careful inspection of this mine was made October 19 and the mine found in a very fair condition. The air on the east side was fresh and strong at every point, but several checks were found on the west side which were causing great derangement in the ventilation. All the work is confined to the north side of the shaft, and the ventilative volume of air is conducted around the mine in two currents, one current ventilates the east side, while the other furnishes air for the west side, and the two meet at the face of the north entry, from which place the air current returns to the up-cast. The current travelling to the west passes over the return air through an air crossing and thence travels on the west entry to its terminus and returning through the face of the workings on the north entries. Owing to the long route this current has to travel and through some small and contracted airways, I found it very much overloaded with work and the company was requested to open out all places where falls were encountered and enlarge the air courses. This mine is very dry and the dirt stowed away in the gob heats and sometimes spontaneous combustion takes place, and when the heat comes in contact with the air it becomes so hot as to make it not only very unpleasant for the miners, but detrimental to the roof which sweats

and crumbles from the effect of the heat. At the face of the longwall work, where the unavoidable falls and squeezes occur, great annoyance to the management results, as they are of frequent occurrence and invariably have the effect of interfering with the free and uninterrupted passage of the air.

April 24th I made another inspection of this mine, and as on my former visit I found the ventilation satisfactory on the east side, which was mostly worked on the room and pillar plan at this date. On inspecting the west side I discovered that the demand for coal had slackened up and the mine was only working a day or two a week. During the winter months the demand was greater than the mine could supply and the company opened new work and employed all the men it could put on, but the latter part of March the demand for coal fell off to such an extent that a large number of the miners left for other mines, leaving two-thirds of the rooms vacant. Any part of these mines while standing idle will heat and sweat, the roof will crumble and fall. A condition of affairs like that is a great disadvantage in the operation of this mine. When the mine works steady and the coal face moving every day there is no difficulty in conducting the air satisfactorily around; but when there is 2,000 feet of face opening and the mine only running a day or two a week with the roof of a friable nature it is next to impossible to conduct the air in a satisfactory manner around to every part of it. I made a thorough inspection of the mine again on the 16th of July, and as on former inspections found the ventilation on the east side satisfactory. I inspected the mine again on the 22nd of August and found the ventilative volume of air sufficient in quantity, but overloaded with work and very much vitiated with black damp, plainly showing the inefficiency of the fan to furnish the air in sufficient quantity and quality to justify the demands of the mine. In the latter part of September I visited the mine again in company with Mr. Walton, and after a thorough investigation readily realized the necessity of sinking another air shaft nearer the face of the work, same to be used as a downcast, and at the time of this writing said shaft is nearly down to the coal and when completed the air connection will be made at once and make the ventilation at this mine satisfactory. Coal 45 inches thick and worked now altogether on the longwall plan. From 100 to 150 men and boys employed. The product is mostly consumed by the R. R. company; 10 chutes have been erected here to coal engines.

Mine No. 2 is located two miles east of Higbee. Adam Young, foreman. Shaft 125 feet deep, and equipped with first class machin-

éry. This is a new mine sunk and equipped during the fall and winter of 1900, and at date of first inspection on the 18th of December, 1900, it had commenced the shipment of coal. Shipping connection is obtained with the Chicago & Alton railroad by a switch. The machinery and equipments of this mine are all new and of modern improvement. The engines were built by the Riverside Iron Works Company of Kansas City, Mo., with twin cylinders 14 by 24 inches connected to a 5-foot drum, working on first motion, and the steam is furnished by one two-flue boiler at present 30 feet long and 44 inches in diameter. All the machinery is set on solid rock foundation and enclosed by a commodious building. The boiler house and engine room are under the same roof and partitioned off into proper compartments, the engine room being entirely separate from the boiler room. The pit top or head gear is 48 feet from ground to pulley wheels and 32 feet to coal landing. The head house is 26 feet wide by 40 feet long, constructed with every convenience for handling a large tonnage of coal with great rapidity. The coal is discharged from a self-dumping cage to a hopper and weighed on a hopper scale, which is well constructed, hung and resting on posts entirely separated from the top building and on rock foundation and is the only scale constructed on this plan in the State. The door hook on the hopper to let out the coal is worked and regulated by steam and very convenient. The coal is thus delivered into a shaker screen, which screen grades the coal into different grades and sizes, and different tracks are provided for each grade. The shaker screen works on a pendulum motion at an elevation of about 18 degrees and the screen operated by an independent engine of 10-horse power. The weigh house and other appliances for the speedy, convenient and economical handling of a large tonnage of coal are models of neatness and usefulness. The cages are new, strongly built and supplied with the latest improved safety catches. New hoisting ropes were also added to the equipment of the plant, making it one of the best constructed plants in the State. The escapement shaft was sunk soon after the main shaft, and is divided into two compartments, one of which is for air, while a stairway is built in the other compartment for the men to travel. A 14-foot ventilating fan is built at the escape shaft and is operated by a 10 by 12 inch cylinder, horizontal engine connected directly to the fan shaft, and capable of producing one hundred cubic feet of air per minute in the mine. The fan house and casing is constructed by a system of doors so that the fan can be made to force or exhaust the air as the require-

ments of the mine may be without stopping it. On entering the mine on my first visit I noticed that Mine No. 2 had one of the best bottoms in the State, and the work on it has been performed in a workmanlike manner, with plenty of room for men and mules to move around without confusion. The coal is all caged on one side of the shaft and all the empties taken out on the other side, thus affording the handling of a large tonnage with the greatest of ease and rapidity. There is a diversity of opinion among practical coal and mine men as to which is the best and cheapest plan, the one practiced at this mine or the old system of handling coal on both sides of the shaft, and the writer much prefers the plan adopted at this mine for various reasons. The mine was opened out on the room and pillar plan, and the underground work contemplated that entries be turned at right angles from main entries and that an overcast was to be constructed about 300 feet from the shaft bottoms after the mine is developed further. This plan will furnish two separate currents of air on each side or four currents in all. I also noticed from the plan that each set of cross entries can be ventilated separately if necessary, and the mine as planned and equipped will soon be a great factor in the coal production of this country. The shaft bottom is timbered with large, substantial timber and all practically set. The double parting is extended 200 feet on the west side and about the same distance on the east side and all laid with heavy iron. I made two more inspections of the mine and found it in excellent condition, with the ventilation satisfactory. I noticed on my last visit that the system of mining had been changed from the room and pillar to the longwall, which will likely prove the more successful method of mining this seam. Coal 42 inches thick, and overlaid by good slate roof. The coal is shipped to Kansas City.

Interstate Coal Co. Wm. Walton, Superintendent; David Bomen, foreman. Mine located one and one-half miles south of Higbee, and connected with the M., K. & T. R. R. Shaft 110 feet deep, and equipped with first class machinery for hoisting. The ventilation is produced by a 12-foot fan, which runs at a speed of about 90 revolutions per minute with good results. This mine was closed down in June, 1899, by request of the miners organization and remained closed until the latter part of October, 1900, during which time it suffered considerable damage by falls and caves, and the mine would have remained closed indefinitely but for the activity and enterprising action of Mr. Wm. Walton, who leased the property from the owners and is now operating the mine. The former operators of this mine became disgusted with the action of the leaders of the

miners organization in closing the mine when they had signed the scale, complied with every request and demand of the organization and were only supplying their own customers with coal. The operators having been denied the right to operate their mine in accordance with the arrangements previously agreed to between them and the organization preferred to quit the business and close the mine rather than operate under such unsatisfactory conditions.

After spending considerable time and money in cleaning and putting the mine in condition again, it started to ship coal in November, 1900. I visited and made an thorough inspection of the mine on the 12th of February, 1901, and found that the air courses on the north entry off the east had been cleaned and the air was passing through that portion of the mine in a very satisfactory manner; but I discovered a few places on the south entry that had not yet been fully cleaned and the ventilation was deficient; at the time, however, preparation was being made to make another air connection and remedy the evil. I made another inspection on the 25th of May and found the ventilation satisfactory at every point and the mine otherwise in good shape. I returned on the 1st of October and made another careful inspection. The ventilation at this date was satisfactory in the north part of the mine, and a good current of fresh air was found passing along the face of the work. The ventilation was very good on the south side also at this date, with but one exception, and as soon as the connection could be made between the 4th and 5th south entries the defect would be remedied. The general condition of the mine at this date was satisfactory, and noticed that it is rapidly recovering from damages sustained while it remained idle. Coal 45 inches thick and worked on the longwall plan. There are about 100 men and boys employed; 85 cents per ton is paid for mining merchantable coal. A large portion of the product is consumed by the R. R. Co.

Huntsville Post Office.

Morris Bros. Coal Company. James Orris, superintendent. Mine located one mile east of Huntsville, and has shipping connection with the Wabash railroad. Shaft 100 feet deep, and equipped with first class machinery for hoisting. This is a new mine, with shaft sunk during the spring of 1900. Commenced shipping coal in August of same year, and at date of inspection, September 3, it had a large output. The mine is equipped with all modern improvements. The engines were built by the Riverside Iron Works of Kansas City. The cylinders are 10x16 inches, connected direct to

a 4½-foot drum. The pit head and top buildings are all new and well constructed, furnishing every convenience for the handling of coal. The machinery is set on good rock foundation and enclosed by a substantial house. The cages are new and well built, and are supplied with good safety catches; new hoisting ropes have also been put on, all of which makes it a well constructed plant. At date of first inspection I discovered that the main entries were driven north and south, and cross entries east and west and that connection had been made all around for the ventilation, and a fan set at one end of hoisting shaft exhausting through an air chamber partitioned off for that purpose. It was giving satisfaction as far as furnishing air was concerned, but the law requiring two separate outlets, separated by natural strata of not less than 300 feet in breadth for a safe avenue of escape for the employes in case of accident. The company was notified to comply with the law and sink an escapement shaft at once, which instructions I am pleased to state were immediately complied with. I visited the mine again on the 26th of March and made a thorough inspection. I found the escapement sunk and completed; the connection made with the inside work and an excellent stairway built for the men to travel in and out of the mine. The fan still set on the side of the hoisting shaft where it was on my former inspection, and was giving excellent results. The ventilative volume of air travels around the mine in two currents as it is divided at the bottom of the down cast to the north and south, and an abundance of fresh air was found passing around every part of the mine. I discovered also on this visit that the mine had been extensively developed since last inspection and had an output of 25 cars a day at this date. The entries had been brushed and securely timbered and the general condition was first class. I made another visit on the 19th of July, but the mine not being in operation and only a few day hands at work making repairs, no inspection was made. I returned on the 29th of October, and made a careful inspection and found the mine in good condition and the ventilation fully up to the requirements of the law, but so much over loaded with work as to make it unfit to breathe. I discovered 232 men and boys working in the mine with only two currents of air, and to make matters still worse, fully 200 shots were fired at noon every day, thus making the fumes and smoke so dense and thick that the miners could not see their own lights for two hours in the afternoon. I instructed the management to clean and enlarge some of the airways, change some doors and construct two over casts on the south side and divide the volume of

air into two more currents. We also advised the miners to abandon the custom of firing at noon, and adopt a rule to fire shots only at night. A miner can dig more coal, use less powder by this rule than by firing twice a day and he will feel a hundred per cent. better in going out of the mine every evening. And we are convinced it would be very much to their interest to adopt it. I visited the mine again on the 12th of November and found that some of the air-courses had been cleaned, one door changed and an overcast built over the south entry at the 2nd west, thus ventilating the first and second west entries by a separate current which was coming down the escape shaft, and adding that much more to the ventilating current. We noticed that another overcast was in course of construction on the south entry at the 4th west which was to be completed in a few days. This would make four separate and distinct currents of air. We noticed, also, on this visit that the airways on the east side were very much choked up with dirt, thus retarding the air very much. The management was instructed to clean them at once. In response to a complaint from the local union of a deficiency in the air, we visited the mine again on the 31st of December, made a thorough inspection and was accompanied through the mine by the pit committee, and the mine was found in excellent condition. Test of the air was taken on the south side, and 25,760 cubic feet found passing on that side where the largest number of men were at work, and 17,400 cubic feet was shown to be passing on the north side. The air was passing around the mine in four currents, and were very evenly divided except the last current on the south side which was a little over loaded. All the air-courses had been cleaned so that we could walk through with ease. We found too much use made of curtains where wooden doors should be used. We also found that the pernicious habit of firing from 200 to 250 shots at noon every day was still practiced here, and many of those shots had from 40 to 50 inches of powder in them. How many of the miners stop to consider the length of time it takes to clear the mine of the smoke, fume and sulphur liberated by the combustion of so much powder in a confined place like that of a coal mine? The fact is there is no fan constructed or system of ventilation yet evolved from the brain of man, that will offset the evils produced by the firing of 200 or more shots at the noon hour every day, even with the best possible facilities for ventilating, and indeed it is surprising to me that the miners will submit to a rule which compels them to inhale an atmosphere so ruinous to them, their health and comfort, and which is responsible for the condition

in which some of them are found when reaching the top, the remedy is in their own hands and yet will not apply it. The Morris Mine No. 10 is undoubtedly the best ventilated mine that was ever operated on the Huntsville track. Coal 45 inches thick and worked on the double entry room and pillar plan; 235 men and boys employed. It is the largest producing mine ever operated near Huntsville. 60 cents per ton is paid for mining run of mine coal. Product shipped west.

Emanuel Edwards operates a drift mine on his own land close to Huntsville during winter months to supply home trade.

Hunt Bros. operate a mine at Huntsville. It is entered by a drift and ventilated by a furnace. The mine was opened out to supply home consumption, but considerable of the product is hauled to the railroad, loaded on cars and shipped over the Wabash Railroad. Coal 4 feet thick and worked on the pillar and room plan. Seven men employed in winter and paid 75 cents per ton for mining.

J. J. Lewis is operating a mine at Huntsville. It has a drift opening and ventilation is produced by a furnace. The product of this mine is largely consumed in the immediate neighborhood, but some of it is hauled and shipped over the Wabash Railroad. Coal 4 feet thick and worked on the room and pillar plan. Five men employed in winter, receiving 75 cents per ton for mining.

W. E. Mitchell. Mine located at Huntsville. It is entered by a drift and ventilated by a furnace. This is another local mine, situated three-fourths of a mile from the railroad and could be made a productive one if closer or had better shipping facilities, but having such a long distance to haul its output, it is largely confined to local demand. Coal 4 feet thick and worked on the room and pillar plan. It is practically operated and the largest producer of the local mines around Huntsville. Ten men employed in winter and five in summer. Mining is paid for at the rate of 75 cents per ton for clean coal.

J. F. Robinson operates a mine in the same locality, on the same coal seam and method as the above-named mines. The coal is taken away in wagons and consumed at Huntsville and vicinity. There are other small mines operated in various parts of the county during winter months to supply home trade.

Kimberly Post Office.

Murlin Coal Company, W. E. Murlin, president; John Sneed, superintendent. This company owns and operated four mines at Kimberly during the past year, and they are great factors in the coal production of this county. All the mines are working on the same seam of coal,

and the same method of mining is practiced at each mine, and all have shipping connection with the Wabash Railroad.

Mines Nos. 4 and 5 are located half a mile north of the railroad, and the coal is hauled up to the track by machinery over a tramway built on trestle, lands it on top of a large building constructed along side of the railroad and the coal is dumped into a screen which is connected by a revolving screen which cleans and separates the slacks and prepares it for market. Both mines have drift openings and ventilation is secured by the aid of furnaces. Drift No. 4 is located on the west side and is called the Diamond. I inspected the mine on the 6th of September, 1900, and found the ventilation satisfactory at this date. I made another inspection on the 25th of February and found a deficiency in the air all over the mine; in fact, there was no air in the mine. I was informed that the mine had changed owners since my former visit, and on investigating the cause of the deficiency, discovered that the former operators, during the last few months they operated the mine, were driving their air courses as wide as rooms to avoid paying yardage. These airways had caved shutting off the passage of the air and entailing the trouble and expense of reopening them on the present operators.

I condemn such practice as strong as words can do so, as it shows the smallness of the caliber of any mine operator that would practice such false economy and crude methods in order to save a few cents and at same time punish his employes. Preparation was made at this date to make connection with another entry and open out another air course, which was completed in five days after date of visit. I made another inspection on the 18th of July and found the ventilation better, but not altogether satisfactory, and instructions were given to clean and enlarge an air course. I was in the mine during the noon hour, at which time from 25 to 30 shots was fired, filling the mine with smoke which the miners had to inhale for fully an hour or more before it cleared away. This is one of the most injurious rules that can be practiced in a mine, in so far as the health and comfort of the employes are concerned, and yet can be so easily done away with. When a place is 30 or 40 feet ahead of a cross cut, and a shot is fired at the noon hour, the miner looses over an hour waiting for the smoke to clear and the place to cool off, then has to go back and inhale the sulphur and fume from the combustion of the powder. I made another inspection on the 28th of October and the ventilation still found deficient as on former visit; in fact, the mine was so badly butchered up before the present operators took charge that it is almost impossible to remedy the evils existing; but the present management is doing all it can to comply with the law, the mine being nearly worked out, they cannot afford to spend much

money on it. Coal from $3\frac{1}{2}$ to 4 feet in thickness and worked on the room and pillar plan. Sixty cents per ton is paid for mining unscreened coal. Forty men employed.

Mine No. 5 is opened out on the east side. It was inspected on same dates as the Diamond mine, and the ventilation was found very much vitiated by black damp coming out of an abandoned slope on the north side of the entry. Instructions were given the company to build air tight stoppings to shut it off. February 26, I made another inspection and discovered that a new air shaft had been sunk on the 2nd south entry, a new furnace built, and the ventilation satisfactory at this visit. I made another inspection on the 18th of July and found everything in good condition. Another inspection was made on the 28th of October.

Mine No. 7. Mine located at Kimberly. Shaft 96 feet deep and operated by machinery for hoisting. Ventilation is furnished by a 10-foot fan with very good results. I made an inspection of the mine on the 5th of September, 1900, and found the ventilation satisfactory. February 25, 1901, I visited the mine again and found it in a very fair condition with the ventilation up to the requirements of the law. Communication had been made on the north side of the mine with the Diamond mine on the north of the railroad, and the air was coming in that way to ventilate that side with very good results. I visited the mine on the 18th of July, 1901, and found that it had been temporarily closed down. On my next tour of inspection of the mines of this county I discovered that the track and pit cars had been taken out and the mine abandoned.

Mine No. 9. Mine located one mile west of Kimberly. This is also a shaft and is equipped with machinery for hoisting. Ventilation is furnished by a 12-foot fan in a satisfactory manner. I made four inspections of this mine since the last report was issued, namely, September 5th, 1900, February 25, 1901, July 18th, 1901, and on the 28th of October, 1901. Ventilation as well as the general condition of the mine was found satisfactory at each date. I discovered at date of last inspection that another air shaft had been sunk and an underground connection made and shaft used as an outlet. Coal about 4 feet thick and worked on the double entry room and pillar plan. About 40 men and boys employed.

This company has opened out two new mines on the H. Smith land, about one mile east of Huntsville, having shipping connection with the main line of the Wabash Railroad. Both have slope openings and are reached by an inclined tramway 1,200 feet long, the coal being hauled by means of a gravity rope. The mine is equipped with a pair of Ellison engines with twin cylinders 12 by 18 inches, geared three to one,

connected to a 5-foot drum with Ellison patent friction clutch. The coal will be handled on the head house or landing by gravity tracks for both loads and empties, and weighed on a hopper scale, thus avoiding the weighing of pit cars each time, and insuring accurate and just weights to the miners. The screen will grade the coal into three different grades or sizes, and lump, mine run, nut and steam coal will be loaded at the mine. The loading switch will hold 40 cars, and the management intends to bring the capacity of these mines up to 1,200 tons a day inside of a year.

Work was commenced on these mines on the 1st of October, 1901, and at the end of December both slopes were opened, cross entries turned, air shafts sunk and underground connections made with same, 1,200 feet of trestle work erected, head house built, a hopper pocket and a hopper scale constructed, the machinery set and a commodious building for machinery and boiler built, and the mine ready to ship coal on the 1st of January, 1902, but shipment was delayed on account of the railroad company failing to complete the switch, owing to winter weather. The mines will be operated on the double entry room and pillar plan, and ventilation will be furnished by the aid of furnaces for a while, but when further developed we think a fan will be substituted for the furnace. We visited the mine in December, 1901, but no system of ventilation had been adopted at this date. We noticed that both slopes had been very practically opened and well secured with timber. The coal will average 4 feet or more in thickness; it is overlaid with excellent roof and at this stage promises to be an excellent mine. The company owns a large tract of coal land in that locality and its mines will be great factors in the coal production of Randolph county.

Moberly Post Office.

Enterprise Coal Co., John Cronan, operator and manager. Mine located 3 miles northwest of Moberly. It is entered by a drift and ventilated by a furnace. The coal will run from 3 feet 8 inches to 4 feet in thickness and of fine quality for both steam and domestic purposes. It is underlaid by a fire clay mining, and overlaid by a variety of slate and sandstone which makes good roof, because easily secured. The product is taken in wagons to Moberly and surroundings where it is consumed, consequently the capacity of the mine is limited to the local demand. Employment is given to 6 men, and 75 cents per ton is paid for mining clean coal.

Cooper & Stackhouse Coal Co. Mine located one mile west of Moberly and has shipping connection with the Wabash Railroad. Shaft 125 feet deep, hoisting by steam power. The ventilation is secured by the aid of a furnace and giving very good results. I inspected the mine

on the 6th of September, 1900, and found the air considerably better than on former inspections, but it could be bettered by cleaning the air course where air was traveling to furnace. On the 21st of February, 1901, I made another careful inspection and found the ventilation satisfactory, but the mine otherwise was in bad condition, and the company was instructed to timber all the entries and make them secure and put safety catches on cages. On the 18th of July, 1901, I made another visit and found the mine in very good condition. I discovered that the entries had been timbered and the ventilation good, the safety catches were on the ground ready to be put on cages. I learned that they were put on in two days after this visit. Another thorough inspection was made on the 29th of October, 1901, and mine found in a satisfactory condition. We noticed on this visit that entries were driven on the west side of the north entry to make a shorter haul for the coal as well as to shorten the route of the air current. This improvement, as soon as it is completed, will greatly improve the mine. Coal, four feet thick and worked on the room and pillar plan; about 30 men employed. A large portion of the product is taken away in wagons and consumed at Moberly and vicinity, while the balance is shipped over the Wabash Railroad.

Harry Ward is operating a mine two miles northwest of Moberly, shaft, 89 feet deep; hoisting by a horse. Ventilation is furnished by a furnace. Mine only operated during fall and winter; product consumed in surrounding country.

RALLS COUNTY.

Production, 25,238 tons.

Ralls shows considerable increase in her output of coal during the past year as compared with the previous one, and we expect to find still larger increase, as her coal field is being constantly developed, and new mines opened out.

Perry Postoffice.

Ralls County Coal Co. Mine located one and one-half miles northeast of Perry and connected with the Hannibal & St. Louis Railroad. Shaft, 45 feet deep; using horse power for hoisting. Ventilation is secured by the aid of a furnace with satisfactory results. I made a careful inspection of the mine on the 5th of October, 1900, and found it in good condition. I discovered that a new air course had been made from the furnace to the south entry off of the first east, which was used for the return of the air and had greatly in-

creased the volume of air all over the mine. I made another inspection on the 13th of June, 1901, and found the mine in a very satisfactory condition. The air enters the mine at the hoisting shaft and travels over the north entry to its terminus; thence to the east returning to the up-cast along the face of the workings, ventilating the mine in a practical way and keeping it in good sanitary condition. On the 19th of November, 1901, I visited the mine again and found it in excellent condition with everything very satisfactory, the air good, roadways dry, high, safe and clean and in good working order. Coal, 26 inches thick and worked on the longwall plan paying 91 cents per ton for mining; from 30 to 35 men employed; the product is nearly all consumed by the Hannibal & St. Louis Railroad on the engines. Fred King, foreman.

Clark Coal Co. Mine located $1\frac{3}{4}$ miles northwest of Perry and has shipping connection with the Hannibal & St. Louis Railroad. Shaft, 60 feet deep; operated by horse power. The ventilation is furnished by a furnace with satisfactory results. I inspected the mine on the 5th of October, 1900, and found it in excellent condition with the ventilation very good all around. On the 13th of June, 1901, I visited the mine again and made another inspection and found that a fault had been encountered on the south and west entries which caused a derangement in the ventilative current of air. The mine being operated on the longwall plan could not be driven through the fault on that plan, and narrow entries were driven through it into good coal. An air-course was in course of construction at this date, which when completed it was expected would bring the ventilation up to the requirements of the mine. Another inspection was made on the 19th of November, 1901, and discovered that the whole face had been driven through the fault and the ventilation was passing around the entire face of the work making the air good in every part of the mine. Same seam mined here as at the other mines, with other condition the same. 15 men employed.

Perry Coal Co. Mine located two miles northeast of Perry and has shipping connection with the Hannibal & St. Louis Railroad. Shaft, 63 feet deep; hoisting by horse power. This is a new mine; shaft sunk and opened out during the past year, and at date of first inspection June 13, 1901, had connections made with the air-course and a good current of air found circulating around. The ventilation was secured by the aid of a furnace which was built at the bottom of the shaft exhausting through an air chamber partitioned off at one end of hoisting shaft, instructions were given the company to

sink an escapement shaft. I returned to the mine and made another inspection on the 19th of November, 1901, and found the ventilation good and the condition of the mine satisfactory; but the escapement shaft had not been sunk as yet. The company was again instructed to sink an escape at once, which it promised to do. Coal, 26 inches thick and worked on the longwall plan; about 15 men employed; the product is consumed at local towns along the railroad, but a large portion is sold at Hannibal, it being a fine domestic coal.

Ralls County Coal Co. Mine No. 2. This company opened out another mine the latter part of last year about one mile east of mine No. 1, and has shipping connection with the same railroad. Shaft, 45 feet deep; hoisting by horse power. Ventilation is furnished by the aid of a furnace which is located at the bottom of the hoisting shaft, exhausting through an air chamber partitioned off along side of same, but an escape shaft will be sunk at once and the furnace removed. The same seam is mined here as that at the other mines, and the description of one mine is suitable to them all. All the mines are remarkable dry, taking into consideration the shallowness of the covering. The coal is of excellent quality for both steam and domestic purposes, and always finds a ready market where once used. The seam is overlaid by a slate roof which is easily secured by timber and the mines can be economically operated.

I Burgèr is operating a mine near Perry in the winter months to supply home demand.

R. Wells and John Akerson operate drift mines in the neighborhood of Perry in fall and winter to supply home trade.

RAY COUNTY.

(Production, 264,900 tons.)

Ray county, like all the other large coal producing counties of the State, shows an increase in her output of coal the past year. The output of coal amounts to 264,900 tons, showing an increase of 21,308 tons as compared with previous report. The number of men employed in and around the mines averaged 1,104 in winter months, and 669 during the summer season. Of the 25 mines operated in this county all are worked on the longwall plan, and are mining the same coal seams throughout. The principal mines are located at Camden, Fleming and Richmond, while smaller mines are operated in other section to supply local consumption. Following is a description of each mine, together with a statement as to their location and condition as found at dates of inspection.

Fleming Postoffice.

Murlin Coal Co. W. E. Murlin, President, and Harry Wyett, Foreman. Mine located at Fleming and has shipping connection with the Wabash Railroad. Shaft, 70 feet deep; equipped with good machinery for hoisting. The mine is ventilated by a 12 foot fan and giving excellent results. The ventilative current comes down the main shaft traveling over the north entry as far as first east, where it is turned and conducted over the first north off of the east until it reaches its terminus. Here it is divided to the east and west sides traveling along the face of the workings furnishing plenty of fresh and healthy air to every part of the mine where men are at work; thence, passing abandoned workings on its return to the fan shaft after serving the men. This method of ventilating mines is practical and the only method that should be practiced in any mine as in this manner the miner gets the first air direct from the down cast, and we highly commend this company for its untiring efforts to operate its mines in a safe and healthy condition. I made the first inspection of this mine on the 15th of November, 1900, and found it in excellent condition. Test of the air was taken on the intake at main north entry and 24,320 cubic feet was found passing in one minute with 92 men at work. This volume of air is conducted around in two currents in a very satisfactory manner as it gives every man plenty of fresh air to breathe. Machinery, ropes, cages and safety catches were thoroughly examined at this visit and found in good working condition. February 28, 1901, I made another careful inspection and found the ventilation the same as on my last inspection double the amount required by law and the general condition of the mine was first-class. On examining the safety catches at date of this visit I discovered that the spiral spring had become twisted somewhat by the rough usage of the cage and this prevented the cams or sectors from taking hold or biting into the guides if the rope should brake. The foreman was notified to reset the catches and put them in good working order, and in a few days this office was notified that the defect was immediately remedied. I also examined the escapement shaft and discovered parts of the stairway rotted and considered unsafe. It was condemned and we recommended a new stairway built as soon as possible. On the 8th of April, 1901, the following letter was received at this office.

Fleming, Mo., April 8, 1901.

Hon. Charles Evans, Inspector of Coal Mines, Jefferson City, Mo.:

Dear Sir—I beg to advise you that in accordance with your

recommendation upon your last inspection of our Mine No. 30 at this place, we have erected a new ladder in the escapement shaft at this mine.

Yours truly,

MURLIN COAL CO.,

H. L. McPherson, Cshr.

On the 13th of September, 1901, I made another thorough inspection of this mine, and found it in excellent condition. The fan at this date was making 85 revolutions per minute and was passing 28,155 cubic feet of air over the main in-take in same time. This volume of air was conducted around the works in two currents giving plenty of fresh air to every man therein. I discovered on this visit that a new air-course had been made to conduct the return air from the east side in a more direct way to the up-cast, and in this way the ventilative current was increased on this side. The company has made great improvement at the mine during the last six months of the past year, by equipping it with electricity to do the undermining and hauling the coal from the face to the bottom of shaft, and we can now safely say that the Fleming plant is a model of neatness and completeness. The equipment furnished by the company at this mine during the past six months consist of one new Eric high speed engine, 16x24 inches cylinders, 1 new Morgan-Gardner generator, 250 volts, 100 K. W.; one new Rohan boiler 20 feet long by 72 inches in diameter, carrying 125 pounds; one new Gardner & Morgan electric haulage motor, weighing five tons and hauls about 50 boxes per trip; six new Goodman electric longwall mining machines was also put into the mine. Each machine cuts about 400 linear feet in the clay to a depth of three and one-half feet in eight hours. The entire mine is being lined by copper wire calling for about five miles of same, and the entire entries are lighted by electricity. The power used for the mining machines, motor and lights are generated by one dynamo, and one boiler furnishes the steam for the engine that runs the electric plant, which is set on a substantial rock foundation and enclosed by a commodious and roomy building 40 feet wide by 100 feet long. All the old iron rails through the entire mine have been removed and replaced by 16-pound steel rails, which has made the running of cars and motor so smooth as any of our trunk railways. The motor is traveling at a speed of about 10 miles an hour. All the pit cars had to be made new and remodeled, and 50 new sets of self-oiling wheels have been added to those already used. In addition to the improvement already named, two new cages, two new seven-eighths-inch plough steel hoisting ropes, and one Snow pump, two and one-half-inch suction, with two-inch discharge, have also

been added to the equipment of the mine, which makes it the finest and best equipped mine in the State. Machine runners get \$2.25 per day, and loaders, after the machines, get 60 cents per ton for loading. The electric haulage is a great improvement over mule power, and largely increases the output of the mine. The capacity of the mine had been from 200 to 250 tons per day, but with the machinery, as it is now equipped, an output of 500 tons is expected by the management as soon as the employes get familiar with the machines and the haulage. This will be an innovation in coal mining in Ray county, though the success in mining and hauling coal by electricity has been fully demonstrated at other places. The writer was informed by Mr. Murlin, the president of this company, that his main purpose in putting in the electric plant was to increase the capacity of the mine which had failed during the past year to meet the demands. This mine is already fully 4,000 feet from the shaft to the face of the work, and has an unlimited territory to work on, and the coal could not be hauled out profitably by mules. The improvements added to the mine during the past year, which must have cost the company from \$30,000 to \$40,000, has made a new mine of it, and is now good for 20 more years of a large output.

Hardin Postoffice.

The coal so extensively worked at Camden, Fleming and Richmond, extends to Hardin and Norbourne, and a large number of small mines are operated here during the winter months. The coal crops out at the foot of the bluffs, the mines entered by drifts and ventilated by small furnaces. It is of the same thickness, worked on the same method and the same price paid for mining as that of all other mines in the county. Name of parties operating mines in this locality, output of mines and all other information concerning same will be found in the statistical table of this county.

Knoxville Postoffice.

The Grimes Mine is operated by Hugh Blair. Mine located at Knoxville, and operated to supply home consumption. Shaft 190 feet deep. Hoisting by horse power. Ventilation is produced by a small furnace. Coal 24 inches thick, and worked on the longwall plan. Mine only worked during the cold season, and the product consumed at Knoxville and locality.

Ovid Postoffice.

The Climax Mine is operated by W. H. Blunt. This mine is located at Georgeville, and was formerly known as the Sater Mine. Shaft

160 feet deep. Hoisting by a horse. Mine only operated in fall and winter, and the product consumed in the neighborhood.

Richmond Postoffice.

Richmond is the great coal center of Northwest Missouri. It is surrounded by coal mines, and is one of the best mining towns in the State. It is located near the center of the county, and has several mines within the corporate limits of the city, and is almost entirely supported by the mining operations carried on within its surroundings. There are 800 men and boys employed in and about the mines within a radius of three miles of Richmond, and while millions of tons of coal have been taken out, yet mining is in its infancy here, and its production is yearly increasing.

Crispin & Ward Mine, located at Richmond. Shaft 87 feet deep, and hoisting by a horse. Ventilation is furnished by a furnace. Coal 24 inches thick, and worked on the longwall plan. Mine only operated during the fall and winter, and the product consumed at Richmond.

The Daugherty Mine is operated by W. O. Ward. It is located about one and one-half miles southeast of Richmond. Shaft 60 feet deep, and hoisting by horse power. Ventilation is produced by a furnace. Coal 24 inches thick, and worked on the longwall plan. Coal taken away in wagons, and consumed at Richmond and vicinity.

Andrew Blair operates a mine near Richmond during the fall and winter to supply home trade. The shaft is 50 feet deep, using horse power for hoisting. Coal 24 inches thick, worked on the longwall plan, employing three men, paying \$1.00 per ton for mining and wheeling.

Robt. Hayson. Mine located at Richmond one block from court house. Shaft 80 feet deep, and operated by horse power. Ventilation is produced by a furnace. Coal 24 inches thick, and worked on the longwall plan. Seven men employed in winter and four in summer. One dollar per ton is paid for mining. Coal consumed at Richmond.

Fowler Coal Co. Mine located two miles south of Richmond and has shipping connection with the St. Joe branch of the Santa Fe Railroad. Shaft 40 feet deep, and hoisting by horse power. Ventilation is secured by the aid of a furnace with good results. This is a new mine. It was sunk during the spring of 1900, but being located one mile from the railroad the output was confined to wagon trade until the spring of 1901, when a switch was put in from the main track to the mine, and it is now classed as a commercial mine. I visited it on the 2nd of March, but not finding any one at work, no inspection was made. I discovered men at work at this date grading for the switch, which was nearly completed. I made a careful inspection of the mine

on the 10th of September, 1901, and found it considerably developed and practically opened out. The rock had been taken down on the main entry, and mules are soon to be put to work to haul out the coal in place of men. Coal 24 inches thick, and worked on the longwall system. Twenty-five men employed. One dollar per ton is paid for mining.

The Sevier Mine is operated by Chas. Ottman. Mine located two miles east of Richmond. Mine entered by a slope and ventilated by a furnace. Thickness of coal, mode of working and price paid for mining are the same as that at other mines in this locality. Coal consumed at Richmond and vicinity.

Hubbell Coal Co., H. Brown foreman. Mine located close to the city limits, and connected with the St. Joseph branch of the Santa Fe Railroad. Shaft 110 feet deep, and operated by horse power. Ventilation is furnished by a furnace, which is giving good results. I made three inspections of this mine since last report was issued and found everything satisfactory.

I examined the communication between this and the Pickering Mine on last visit made, and found that the bottom had heaved and the space considerably contracted, but it was passable for a man to go through easily in case anything happened to hoisting shaft. Coal 24 inches thick, and worked on the longwall plan, with the moveable face track in use. Employment is given to about 40 men in fall and winter, and pay \$1.00 per ton for mining.

Pickering Coal Co. Mine located near Richmond, and has shipping connection with the St. Joseph branch of the Santa Fe R. R. Shaft 107 feet deep. Equipped with machinery for hoisting. Ventilation is produced by a furnace with satisfactory results. I inspected the mine on the 16th of November, 1900, and found it in good condition with all the safety appliances in good order. I made another inspection on the 27th of February, 1901, and found everything all right. On the 11th of September, 1901, I visited the mine again and found it in good condition with the ventilation and the safety appliances in good order. Thickness of coal, mode of working, and price paid for mining is the same at this mine as that of all others in this locality. Thirty-five men employed. The product is consumed at St. Joseph.

Mercantile Coal Co., Frank Atwil, superintendent; Robt. Blair, foreman. This company is now operating two mines near Richmond, both of which have shipping connection with the St. Joseph branch of the Santa Fe Railroad. Both mines are working the same vein of coal, the same method of mining is practiced at each mine, and both are under the same supervision.

Mine No. 7 is located at Richmond. Shaft 110 feet deep. Equipped with machinery for hoisting, and ventilated by a furnace. I made a careful examination on the 16th of November, 1900, and found the ventilation very fair, considering the long route the air has to travel. The mine having been extensively worked, was also badly neglected in former years. When the demand for coal slackened up in the spring the mine was closed and kept closed until the fall trade started up again. Not a dollar of the earnings of the mine was spent in repairs on it, and everything was left to go to wreck. The ventilative current has to travel over very small airways along the face of old and abandoned workings, full of bends and angles, over stagnant water, and where the settling of the roof is constantly in action, making the area so small that it is almost impossible for much air to screen through. The mine has also outgrown the capacity of the furnace proper, as it has to be fired up to its extreme limits at all times to keep the ventilation to the limit of the law. The air passes down the hoisting shaft and travels the north entry to its terminus where it divides to the right and left hand sides and returning to the furnace. The fire was well attended to, and the doors carefully looked after. February 27th, 1901, I visited the mine and found everything satisfactory. I made another inspection on the 11th of September, 1901, and discovered on this visit that the work on the east side had been abandoned and all the men were confined to the straight and left north. In the very near future this mine will be abandoned. We found the ventilation fully satisfactory, and about 60 men employed. The product is mostly consumed at St. Joseph.

Mine No. 17 is located about a mile north of Mine No. 7 and about half a mile from the city limits. Shaft 190 feet deep, and equipped with first-class machinery for hoisting. This is a new mine. Shaft sunk and mine equipped during the spring and summer of the past year, and at date of my visit, September 12, 1901, it had an output of a 100 tons per day and increasing with each succeeding day's work. The engines were built by the Ottumwa Iron Works Co. of Ottumwa, Iowa. The cylinders are 10x14, connected to a 5-foot drum. The machinery has been set on nature's own masonry—the solid rock leveled up and a wooden frame placed thereon for the engines to rest on, and all enclosed by a substantial and commodious engine house. Steam is supplied by a two-flue boiler 24 feet long and 48 inches in diameter. An escapement shaft was sunk and an underground connection between the two shafts had been made at date of my visit. The escape shaft is partitioned off into two compartments, one of which answers for a passageway for the air, while the other has a ladder erected in it for the escape of the miners in the event of an accident in the hoisting shaft. A 10-foot fan is set on top of the escape shaft, and constructed with doors so that it can be made to ex-

haust or force air in or out of the mine as the requirements may be without stopping the fan. The head gear and top buildings are well constructed, and afford every convenience and facility for rapidity and economy in handling coal. The cages are new, strongly built and supplied with the most modern safety catches. New hoisting ropes have been added, all of which makes it one of the most complete plants in the State. The underground work has been opened out very practically, and the plan contemplates that cross entries are to be turned at right angles from main entries, and that an over-cast erected in the near future which will furnish two separate and distinct currents of air for each side of the shaft and make in all four currents, which plan will doubtless prove perfect in ventilating the mine. Under the supervision of a practical manager, we anticipate no deficiency in the ventilation during the life of the mine. Thickness of coal, mode of working and price paid for mining is the same as that of other mines in the surroundings of Richmond. About 40 men employed at date of visit.

Wilson Coal Co.; Wm. Wilson, manager. Mine located within the city limits and connected with the St. Joseph Branch of the Santa Fe R. R. Shaft, 110 feet deep; hoisting by steam power. Ventilation is produced by a furnace which is inadequate to properly ventilate the mine. The mine has been in operation for a great number of years, extensively worked and badly managed and neglected. The bottom has heaved and the roof has settled along the face of the workings in the return airways to that extent that it has almost closed them up, and as the mine is nearly worked out it is now too far gone to make any improvement in the airways. Ventilation will be kept up the best it can until finished. I made three inspections of the mine at same dates as at the other mines in same locality. Coal, 22 inches thick and worked on the longwall plan. About 35 men employed in winter, receiving one dollar a ton for mining. Product consumed at St. Joseph.

Mine No. 1 is located near Henry, and has connection with the St. Joseph Branch of the Santa Fe R. R. It is entered by a drift, ventilated by a furnace, and operated by Mr. A. F. Rankin, its owner. I inspected the mine on the 19th of November, 1900 and found the ventilation all right, but the roadways were wet and muddy and the mine in poor condition. I made another inspection on the 2nd of March, but as the mine was not running no test of the air was taken. I discovered a check at this date between the crooked east and north entries and instructions were given to have it cleaned. I made another visit on the 9th of September, and found that a shaft had been sunk at the face of the work which was equipped with a horse power

apparatus. This suited the purposes for an escape shaft as well as an air and hoisting shaft, and made the condition of the mine and its safety very satisfactory. A tram road is also built from the new shaft to the railroad track. Mine closed down during summer and was not running at last visit.

Pence & Calnen Coal Co.; J. Calnen, superintendent. Mine located one mile southwest of Richmond and has shipping connection with the St. Joseph Branch of the Santa Fe R. R. by a spur switch extending from the main track. Shaft, 85 feet deep; equipped with machinery for hoisting. I made three inspections of this mine during the past year, and found it in good condition at each inspection. I made the first inspection on the 17th of November, 1900. I discovered at this visit that a fan had been erected to take the place of the furnace which greatly increased the ventilative volume of air. The mine at this date was ventilated by only one current of air, and as this current had to travel all around the mine and furnish air to 90 men, I discovered it was very much vitiated with impurities before it reached the last of the miners, and we recommended that the ventilative volume of air be divided into two currents. On the 1st of March we visited the mine again and made another inspection and found the mine in excellent condition with the ventilation fully satisfactory as only about 40 men were working therein at this date. I discovered that preparation was being made to divide the air into two currents. I made another inspection on the 9th of September and found the quantity of air passing equal to the requirements of the law, but was still circulating around the mine in one current and was very impure, and we notified the management that the air must be divided within 20 days from date into two currents or the mine would be closed. We also requested the employes to notify this department if the company failed to comply with our instructions, and later we were informed that it complied. Coal, 22 inches thick and worked on the longwall plan. Coal shipped to St. Joseph and points north.

Mine No. 3. This mine is located at Lower Camden, and has shipping connection with the Santa Fe R. R. by a spur switch extending from main track to the mine. Shaft, 40 feet deep; equipped by machinery for hoisting, and ventilated by a furnace. This mine was formerly operated by Lockwood & Lusk, but is now leased and operated by the Pence Bros. of Richmond. I made an inspection of it on the 15th of November, 1900, and discovered that the west part of the mine had been abandoned and some works opened out on the

east side. I found the ventilation up to the demand of the law, but the miners were burning a very inferior grade of oil that was filling up the place with fume and smoke and made the mine so smoky that lights could hardly be seen, and all this discomfort in order to save 25 cents on the gallon. I inspected the mine again on the 28th of February and found the ventilation very good, but the mine otherwise in bad condition on account of too much water and mud. Another inspection was made on the 13th of September and the mine was found at this date in excellent condition with the ventilation fully satisfactory. I discovered that great improvement had been made since last visit, by draining the water shooting down the rock, and recurbing air shaft, thus putting the mine in good shape. All conditions in regard to mining is the same here as that of other mines in Ray county.

Camden & Richmond Coal Co.; John Gibson, superintendent and manager; R. Gibson, assistant. This company owns and is operating seven mines in this county, from which a large amount of coal is produced every year, and employment furnished to a large number of men. The mines are all worked on the longwall system, well ventilated and fairly drained, with good, high roadways, and the general condition of each mine very good. The thickness of the coal at the Camden mines is about 18 inches. It is overlaid by a draw slate 10 inches thick, which comes down with the coal and is used to build walls along the roadways to secure the roof, as no timber is used at the face of the work in these mines. The coal in the surroundings of Richmond averages about 23 inches in thickness, and is also overlaid with good strong roof; the moveable face track is used in all the mines. Following is a statement as to their condition as found at dates of inspection. Mines Nos. 1 and 2 are located one mile west of Camden and are connected with the Wabash and Santa Fe Railways. Both mines have shafts of same depth and are equipped with good machinery for hoisting, draining and ventilating. Both mines are ventilated by the one fan which is located at Mine No. 2 and furnishing plenty of air to the mines. I made three inspections of these mines since last report was issued, and found the ventilation satisfactory and the mines otherwise in good condition at each inspection. My first inspection was made on the 15th of November, 1900, and the mine was found in good condition. I made another inspection on the 28th of February, 1901, and found everything satisfactory, I discovered on this visit that the west entry at Mine No. 2 had been re-opened after having been closed down about eight years. The air in this entry was somewhat retarded in its passage caused

by the clay bottom heaving, but there was plenty of air passing. I made another inspection on the 13th of September and found both mines in a very satisfactory condition with the ventilation extra good. The safety catch on one of the cages at Mine No. 1 was found broken and instructions were given to have it fixed and made safe at once. Coal, 18 inches thick and worked on the longwall plan, using the moveable face track. One dollar per ton is paid for mining, from 75 to 100 men employed at the two mines. Product shipped to Kansas City, but the Wabash Railroad Company is using a large amount on their engines, ten chutes having been erected at Mine No. 1 for that purpose.

Mines Nos. 4 and 5 are located one mile south of Richmond and connected with the St. Joseph Branch of the Santa Fe Railroad. Mine No. 4 has a shaft 70 feet deep, and is equipped with very fair machinery for hoisting. Ventilation is furnished by a 12-foot fan with satisfactory results. This mine is connected by underground roadways with Mine No. 5 thus furnishing an avenue of escape to the miners in case of an accident to the hoisting shaft. I inspected the mine on the 19th of November, 1900, and found it in good condition with the ventilation double the amount required by law. I discovered that considerable improvement had been made in grading and draining the roadways. I visited the mine again on the 1st of March and found everything satisfactory. I made another inspection on the 9th of September and found the ventilation and the condition of the mine fully satisfactory. The product is shipped to St. Joseph, but a large portion of it is consumed by the railroad company on its engines. Chutes have been erected at the mine to coal trains. This mine has been extensively worked; has a very long haul, and makes a large amount of water on the south end. About 75 men employed in winter. L. Wilkerson, foreman.

Mine No. 5 is also a steam plant, and adjoins No. 4 on the north. The shaft is 75 feet deep. The ventilation is furnished by the same fan as that ventilating mine No. 4 and the same description of underground work applies here as that given of No. 4. Good roadways are maintained between the two shafts for escapement from either one in case of accident. I inspected both mines at same dates and found the requirements of the law complied with and both mines in good condition. At date of my last visit to this mine I found it closed down for repairs. New foundation sills were put in under the pit head gear, the shaft was retimbered from top to bottom with 3-inch white pine, and the roadways remodeled through the entire mine. The

company having purchased more coal land, gives new life to the mine. Thos. Shea, foreman.

Mine No. 9 is located one-half mile west of Richmond and connected with the St. Joseph Branch of the Santa Fe R. R. Shaft, 100 feet deep and the only mine operated by this company where hoisting is done by horse power. Ventilation is produced by a furnace with good results. I made three inspections of this mine during the past 18 months and found it in good condition at each inspection. The same seam of coal is worked here as that at all other mines in this locality. About 35 men employed. The product is taken to St. Joseph.

Mine No. 12 is located one and one-half miles northwest of Richmond and connected with the St. Joseph Branch. Shaft, 110 feet deep, and equipped with good machinery for hoisting. This mine was equipped for a great producer, but unfortunately for miner and operator, the coal proved low and faulty, and very little work is being done in it.

Mine No. 14 is located close to the city limits and has connection with the St. Joseph Branch of the Santa Fe R. R. Shaft, 90 feet deep; equipped with good machinery for hoisting. Ventilation was produced at dates of first and second inspections by a furnace, but the company was contemplating putting in a fan in the near future. This is a new mine. Shaft sunk and mine opened out during the past year. The company has equipped it with good machinery. The pit head and tippie house is well-constructed for convenience and economy. The machinery is set on solid rock foundation enclosed by a good engine and a boiler house. I inspected the mine on the 17th of November, 1900, and found it in excellent condition. The ventilative volume of air at this date was coming down the main shaft and was conducted to the first north entry and split to the east and west, and giving satisfaction. A communication had been made with the escapement shaft making everything safe about the mine. On the 1st of March I made another inspection and found the mine and all the safety appliances in excellent condition. I made another inspection on the 11th of September and found the condition of the mine and the ventilation very satisfactory. I discovered at this visit that the entries had been brushed and made wide and the mine greatly developed since last inspection. It is located in close proximity to old Mine No. 6, and has an underground connection with the latter which is used as an escapement way. The mine is dry and clean and will soon be a good producer. Thickness of coal and mode of working and price paid for mining is the same here as at other mines in

this county. Coal shipped to St. Joseph and points north. James Blair, foreman.

Swanwick Postoffice.

Fowler & Mackin Coal Co. Mine located at Swanwick and has shipping connection with the St. Joseph Branch of the Santa Fe R. R. Shaft, 110 feet deep; equipped with horse power for hoisting, and ventilated by a furnace. This mine was formerly operated by the Williams Coal Co., but it sold the mine to the present operators during the past year. The mine is working the same seam of coal and on the same method as all the other mines in Ray county, and the same price is paid for mining. I made three inspections of it during the past year and found the ventilation satisfactory at each visit. The escape shaft was retimbered during the past year and the communication between the two shafts is kept open for the passage way of men in case of an accident to hoisting shaft. Coal shipped and consumed at St. Joseph. Thirty men employed.

ST. CLAIR COUNTY.

While the greatest portion of St. Clair county is underlaid by the coal bearing rock formation, yet very little mining is carried on in the county. The coal around Appleton, is about 18 inches in thickness and is obtained by stripping, while around Iuka Springs, Tiffin, Dottie and Johnson City the coal will run from three feet to three and one-half in thickness, and at Osceola, Lowry City and Taberville the coal is about 26 inches and a large portion mined by stripping. There are mines in the surroundings of Lowry City that could be made productive if close enough to a railroad so that the product could be shipped. The output is confined to local trade. Names of operators, output and all other information concerning the mines of this county will be found in the statistical table in this report.

Saline and Schuyler counties are small producers of coal, but more especially Saline county, which reports one or two mines each year, yet the county is nearly all underlaid by the coal formation. Schuyler county has a 4-foot seam of coal underlying a large portion of her territory which will be fully developed in the near future. This seam is now worked at the head of the Chariton River near the Iowa line, but the mine is located two miles from a railroad.

VERNON COUNTY.

During the year Vernon county produced 164,972 tons of coal, which was sold at the mines for a total valuation of \$170,246.

and is the product of 15 mines, employing 302 men and boys, in and around the mines. The most productive mines at present operated are located at Panama, in the northern part of the county, but new coal discoveries are made all the time, and other mines will soon be opened further east and south. The coal belt embracing Bates county extends throughout Vernon in a southeasterly direction, where the prospector will soon be at work developing the coal field of that section of Vernon. Following will be found a detailed description of the more important mines, their location and condition as found at dates of inspection:

Arthur Postoffice.

Arthur Coal Co., Frank Williams, superintendent. Mine located one and one-half miles north of Arthur, and has connection with the Missouri Pacific Railroad. The mine is located nearly a mile east of the railroad, and the coal is hauled by mules over a tramway, dumped into cars at the switch, and shipped over said railroad to market. Mine is entered by a drift, and ventilated by a furnace. The ventilation was found very much disarranged at each inspection, as no system of conducting the air around the mine is practiced here. The pillars are nearly all taken out between rooms, and cross cuts. Mouths of abandoned rooms are left open for the air to drift where it pleases, with nothing to check it, except canvas doors, and when the air gets deficient an air shaft is sunk to remedy it. The mine is entered from the bottom of a strip pit and surrounded by strip pits, and is now nearly worked out. Found all the men confined to drawing pillars at date of last inspection. I visited the mine on the 14th of October again, and discovered that it had remained idle during the summer months and had just started operation at this date. It was in a deplorable condition, with water and mud everywhere, with only about 15 men at work. The ventilation was found satisfactory. Coal four feet thick, and worked on the room and pillar plan. The product is hauled from the mine over a tram road for a mile, dumped on cars and shipped over the Mo. P. R. R.

Rich Hill Postoffice of Vernon County Operators.

Rush Coal Co., Jas. Brown, superintendent; Thos. Watson, foreman. Mine located five miles southwest of Rich Hill, and has shipping connection with the Mo. P. R. R. by a spur switch extending from the main track to the mine. Shaft 100 feet deep, and equipped with first-class machinery for hoisting. This is a new mine, the shaft having been sunk in the fall of 1900, and coal struck at the above mentioned depth. The pit top and head gear are well constructed for convenience and economy in working. The top landing stands 20 feet above the rail, and from the ground to the sheave-wheels is 40 feet. The engines were built by

the Keystone Iron Works at Kansas City, Mo., and are 12x16-inch cylinders, connected to a five-foot drum. Two large boilers are used in generating the steam. The machinery is set on good rock foundations, and enclosed by a good substantial engine and boiler house. The cages are new and strongly built, and supplied with the latest improved safety catches. New hoisting ropes have also been put on. The equipment is new and embraces all of the modern improvements. Ventilation is furnished by a fan with satisfactory effect. I made the first inspection of this mine on the 9th of November, 1900. The fan at this date was set on one end of hoisting shaft exhausting through an air chamber partitioned off main shaft, but as soon as the escapement shaft is sunk the fan will be removed. The ventilative volume of air is conducted around in two currents, furnishing plenty of air to every part of the mine. I inspected the mine again on the 3rd of June, and found it in good condition with plenty of fresh air flowing through it. I discovered at this date that the escapement shaft was sunk and preparation was being made for the under ground connection between the two shafts, and to remove the fan. On the 14th of October I made another inspection, and found conditions very satisfactory. I discovered on this visit that the communication between the two shafts had been made; the fan removed and set on top of escape shaft, and a ladder erected, and everything constructed in full compliance with the mining law having reference to mine management. The ventilative current of air was found almost double the quantity required by the law, and practically conducted around the mine. Coal 42 inches thick, and worked on the double entry room and pillar plan, and the coal extracted by blasting it off the solid. The mine is practically operated, roadways dry, high, and clean. About 75 men and five mules employed.

Panama Postoffice.

Central Coal and Coke Co., David Mackie, general manager; John H. Williams, superintendent. This company is operating two mines in this locality, and both have shipping connection with the Missouri Pacific by switches. Both mines are working the same seam of coal (which varies greatly in thickness), and on the same plan. Both have shaft openings, are operated by machinery, ventilated by fans, and are under the same management.

Mine No. 14 is located one and one-half miles south of Panama. Shaft 114 feet deep, and operated by a good steam plant. Ventilation is furnished by a 15-foot fan, with excellent results. I made three inspections of the mine during the past year, and found it in a satisfactory condition at each visit. The ventilative volume of air is conducted around the mine in four separate currents supplying every part of the

mine, with plenty of fresh air. I made the first inspection on the 9th of November, 1900, and was fully satisfied with the result of same. On the 3rd of June, 1901, I made another inspection, and found the ventilation and condition of the mine satisfactory. October the 17th, I returned and made another careful inspection, with satisfactory results.

The coal runs very uneven, rolling and changing so suddenly to the rise or dip, as to seriously interfere with any systematic regulation of the air current, besides that it adds greatly to operating expenses. An incline plane is constructed inside the mine, and the coal is hauled from the dip entries by machinery. The mine generates gas, which is found in the raise entries, but it is carefully looked after and taken care of. Gasmen are employed here to go around and examine every part of the mine every morning and see that it is clear of gas before the men are allowed to enter it. Shot firers are also employed at high wages to fire all shots after the employes have left the mine, showing that the safety and comfort of the employes are carefully looked after by the management. We noticed also at each inspection that the machinery, ropes, cages, safety catches, cage covers and all safety appliances are kept in safe condition at all times. Coal will vary from four to six feet in thickness, worked on the room and pillar plan, and extracted by the use of powder; 135, 110 and 85 men were employed respectively at dates of inspection. Product shipped to Kansas City and points west.

Mine No. 17 is located one mile east of Mine No. 14, and connecting with the same switch as the latter mine for shipping facilities. The shaft is 80 feet deep, and equipped with first-class machinery for hoisting. This mine shaft was sunk in the summer of 1901, and at date of my visit, October 17th, I discovered that coal had been struck, the machinery and boiler set, the pit top and head house erected, about one mile of railroad built, and everything was then ready to commence shipping coal. The equipment for Mine No. 21 was bought by this company, removed, remodeled and set up at this mine. The escapement shaft is located about 300 feet from main shaft, both were sunk at the same time, and an underground connection had been made at date of my visit. A 12-foot fan had been built on top of the escape to furnish the ventilation in the mine, and the fan house and casing is so constructed with doors that the fan can be made to force or exhaust air in the mine as the requirements may be, without stopping it. The escape shaft is partitioned off into two compartments, one for the air proper to travel, while a stairway is built in the other. The mine as equipped, planned and contemplated by the operators will be a good producer, but as there was no system of ventilation adopted at this time, and operation just started, will write more fully after it is further developed.

COAL POCKETS.

Isolated deposits of coal are found in a number of counties, but more frequently met with in the counties of Callaway, Cole, Miller, Moniteau, Morgan and Saline. The coal found in the pockets lie in the form of a basin, sometimes with a very even curvature and again the sides have an abrupt pitch. In some instances it is stratified, the layers lying horizontally in the center but curving as the walls are reached. The Stover and Simpson deposits east and northeast of Versailles, Morgan county, have been celebrated for their thickness, shafts having demonstrated the coal to a depth of 80 feet. The Cannel Coal deposit at Hickory Hill, Cole county, has been tested to a depth of 90 feet and is comparatively unknown because of its heretofore great distance from a railroad, the opening of the Colorado railroad will doubtless give it more prominence. Within a short distance of the cannell coal deposit a pocket of bituminous coal has been worked, its thickness and extent have as yet to be discovered. Here as well as in most of the coal deposits, zinc blende occurs and sometimes lead in considerable quantity. In Miller county, near Aurora Springs, The Republic Coal Company has opened up a coal bank, having installed some very good machinery and constructed two miles of railroad to connect it with the Bagnell Branch of the Missouri Pacific Railroad.

The past year has witnessed more activity in the working and development of coal pockets than for many years, due to the new lead and zinc mines opened up and the construction of the Colorado Railroad. This new road will encounter so many coal deposits along its line in the counties named, that a large business must result to the railroad from them; that which may be lost in the continuity of the deposits will be offset by the great number of pockets that will be opened when transportation facilities are furnished.

The presence of lead and zinc in both the cannell and bituminous varieties of coal found in these pockets, together with the scientific association of these minerals by some geologists, emphasizes the importance of a thorough test of some of our large coal pockets. At no place that we have heard of has there been an investigation or development of these deposits that should satisfy our Board of Geology.

TABLE V—Showing the annual product of each

Counties.	Number of tons of coal mined—					
	1890	1891	1892	1893	1894	1895
Adair.....	14,840	16,110	14,820	20,957	20,744	24,540
Audrain.....	22,813	19,569	29,792	42,282	43,910	40,918
Barton.....	63,097	63,626	108,784	61,301	55,767	76,242
Bates.....	671,373	726,273	659,924	627,514	291,271	252,231
Boone.....	21,302	23,577	21,038	25,602	19,038	21,090
Caldwell.....	17,074	22,661	38,333	29,020	22,869	17,876
Callaway..	18,355	15,581	16,551	23,981	23,223	16,771
Carroll.....			1,380	1,088	920	2,664
Cass.....						
Cedar.....		1,264	4,181	890	730	1,590
Chariton.....	120	1,170	2,312	1,136	185	1,859
Clay.....	5,036	8,289		7,139	19,371	4,000
Cole.....		2,000	1,548	1,200	2,000	1,120
Coopeer.....	1,594	2,200	3,666	2,892	2,639	2,492
Dade.....	1,400	3,402	6,881	6,695	2,327	5,066
Grundy.....	23,593	28,983	28,670	35,770	35,000	37,200
Henry..	127,281	144,139	137,258	125,962	84,473	99,058
Howard.....	4,000					3,460
Jackson.....				4,819	6,720	14,632
Jasper..		633				
Johnson.....	13,187	10,530	10,485	12,101	15,427	8,873
Lafayette ..	329,845	352,603	347,600	371,928	299,931	256,761
Lincoln.....						
Linn.....	13,403	28,086	35,588	48,402	61,807	100,179
Livingston ..	1,100	200	1,000	1,000	800	1,050
Miller.....	87	130	127			
Macon.....	457,886	454,029	685,335	788,563	511,566	539,120
Moniteau ..						
Morgan ..	240	488				
Montgomery.....	14,744	12,124	16,039	15,923	12,175	10,900
Monroe.....	108	36				
Nodaway ..		2,222	1,850	2,548	2,804	1,802
Pettis.....			433	181	1,738	
Putnam.....	91,584	123,526	134,984	145,641	119,832	111,572
Ralls.....	675	614	280	2,160	4,400	8,489
Randolph.....	245,398	224,758	296,011	219,762	209,566	218,774
Ray ..	240,462	282,247	272,948	319,405	196,852	150,998

county producing coal for the past 12½ years.

Fiscal years.

1896	1897	1898	1899	1900	Last six months—1900.	Calendar year—1901.
23,510	27,078	62,215	104,868	181,577	52,990	347,047
37,511	35,167	36,498	40,759	43,530	19,892	44,066
37,570	70,554	104,233	67,844	141,520	79,295	183,983
375,300	410,304	343,878	441,983	363,577	193,288	372,218
20,428	14,127	16,780	29,665	19,179	8,848	21,549
19,780	20,000	23,000	28,000	26,000	9,186	19,021
22,182	20,152	21,281	23,356	15,120	9,875	21,582
2,304	2,225	803	2,307	1,575	920	1,430
1,000	1,206	1,558	1,321	2,745	.....	.....
1,863	2,178	1,244	2,116	1,095	770	1,730
355	1,573	3,488	4,517	2,940	1,132	1,447
6,500	9,000	1,500	8,000	12,800	8,944	16,681
.....	3,794	3,704	8,600	.....	.....	2,280
750	250	514	320	1,000	400	1,265
4,570	2,980	4,495	4,930	2,350	2,560	5,393
41,000	35,402	39,974	39,633	42,371	19,619	42,361
78,551	76,023	68,261	81,373	129,902	50,377	103,267
3,220	2,240	.....	456	2,944	1,833	3,685
14,532	21,028	15,000	25,125	20,900	7,500	20,000
.....						
3,961	3,770	4,318	4,710	8,455	4,370	9,695
307,285	284,448	347,857	392,068	377,892	224,465	439,217
.....	.....	.....	.....	270	.....	.....
92,022	67,895	83,041	72,061	81,130	86,508	85,459
1,155	1,468	1,817	800	3,813	667	1,117
.....						
519,648	490,601	720,999	739,293	595,297	435,413	1,025,213
.....	.....	.....	.....	.....	.....	480
.....	6,000	1,440	.....	300	900	1,674
10,736	15,200	2,740	2,670	1,675	1,357	1,680
.....	.....	1,810	960	822	866	1,445
6,065	2,769	1,000	2,350	2,371	1,210	2,000
.....	1,470	5,400	3,200	.....	.....	.....
85,032	101,330	121,952	126,673	106,203	79,406	139,456
9,644	7,843	7,763	16,014	20,956	8,100	25,238
230,194	243,012	314,842	354,830	303,133	179,246	432,655
149,093	157,652	215,348	252,633	243,592	137,252	264,900

TABLE V—SHOWING THE ANNUAL PRODUCT OF EACH COUNTY

County.	Number of tons of coal mined—					
	1890	1891	1892	1893	1894	1895
St. Clair.....		3,866	5,405	6,517	5,837	1,000
Saline.....	660	7,981	4,440	1,865	1,875	3,682
Schuyler.....	300	280	766	962	3,556	1,620
Shelby.....	40	8				
Sullivan.....		560	8,800	1,000	6,600	5,487
Vernon.....	33,292	64,303	119,036	234,376	297,599	237,965
Totals.....	2,437,399	2,650,018	3,017,285	3,190,442	2,383,322	2,283,061

PRODUCING COAL FOR THE PAST 12½ YEARS—Continued.

Fiscal years.

1896	1897	1898	1899	1900	Last six months—1900.	Calendar year—1901.
4,058	5,452	3,599	4,210	3,892	2,767	4,539
432	1,281	740	1,320	500	470	942
2,440	2,022	2,921	5,304	4,253	2,522	3,800
.....						
.....						
303,886	281,894	252,184	298,382	229,343	114,458	164,972
2,420,147	2,429,388	2,838,152	3,391,811	2,995,022	1,695,846	3,813,527

NOTE.—From 1890 to 1900, inclusive, reports were made for the fiscal year ending June 30. The last six months of 1900 are furnished in order to round out the record, future reports beginning with the year 1901 will cover the calendar year.

TABLE VI—Showing by Counties the Plant, Employes, Tonnage

Counties.	Kind of opening.				No. of mines operated.	Kind of power.				How ventilated.			Mode of working.	
	Shaft.....	Slope.....	Drift.....	Strip pit.....		Seam.....	Horse.....	Hand.....	Electricity.....	Natural.....	Furnace.....	Fan.....	Longwall.....	Pillar and room.....
Acacia.....	7	4	3	...	14	6	2	1	...	2	6	5	4	10
Audrain.....	8	2	...	...	10	4	6	...	...	5	6	6	6	4
Barton.....	5	3	4	...	20	4	7	6	...	11	6	6	2	6
Bates.....	5	8	2	18	33	5	17	6	1	12	6	3	4	12
Boone.....	3	2	4	2	11	1	3	7	...	4	4	...	3	2
Caldwell.....	2	...	...	...	2	2	2	...	...	1	...	1	2	...
Callaway.....	1	3	...	...	11	2	5	3	...	4	5	2	8	3
Carroll.....	...	...	4	...	4	2	2	...	...	...	...	...	...	...
Cedar.....	...	5	2	...	7	...	1	6	...	6	1	...	2	5
Chariton.....	1	1	2	...	4	...	2	2	...	3	1	...	3	1
Clay.....	1	1	...	...	1	1	...	...	...	...	...	1	1	...
Cole.....	2	...	...	...	2	2	...	...	...	2	...	...	...	2
Cooper.....	...	1	...	...	1	...	...	1	...	1	...	...	1	...
Dade.....	2	3	...	...	5	1	4	...	...	5	...	...	5	...
Grundy.....	1	1	...	...	1	1	...	...	...	...	...	1	1	...
Henry.....	15	2	2	10	29	9	14	5	1	10	15	2	7	20
Howard.....	...	3	...	...	3	3	...	...	...	3	...	...	2	1
Jackson.....	1	...	...	...	1	1	...	...	...	...	...	1	...	1
Johnson.....	2	3	4	...	9	2	...	7	...	8	...	...	...	9
Lafayette.....	25	10	21	2	58	18	13	23	4	15	26	17	52	6
Linn.....	7	...	...	...	7	3	4	...	...	3	3	1	7	...
Livingston.....	2	1	...	...	3	2	...	1	...	1	...	...	1	2
Macon.....	10	4	3	...	17	10	6	1	...	1	8	8	1	16
Moniteau.....	1	...	...	...	1	1	...	...	...	1	...	...	...	1
Monroe.....	...	2	...	...	...	...	2	...	...	2	...	...	2	...
Morgan.....	...	...	...	1	1	1	...	...	...	...	...	...	...	...
Montgomery.....	2	...	...	...	2	...	...	...	...	2	...	...	2	...
Nodaway.....	3	...	...	...	3	3	...	...	...	1	2	...	3	...
Putnam.....	3	4	10	...	17	3	5	9	...	9	6	2	3	14
Ralls.....	4	1	1	1	7	...	4	3	...	3	4	...	7	...
Randolph.....	11	3	6	...	20	10	8	2	...	5	8	7	4	16
Ray.....	23	1	8	...	32	13	10	9	...	5	18	9	32	...
St. Clair.....	2	3	2	3	10	...	4	6	...	10	...	...	1	9
Saline.....	1	2	...	...	3	...	1	2	...	3	...	...	8	...
Schuyler.....	2	...	...	...	2	2	...	...	...	1	1	...	1	1
Vernon.....	7	4	1	3	15	3	10	2	...	8	3	4	1	14
Totals.....	165	61	88	54	368	102	146	106	6	147	127	73	171	164

and value of the Output of the Coal Mines of the State for Year 1901.

Powder.		No. mules worked		Employees.						Tons of coal mined in each county.....	A v. price per ton re- ceived at mines.....	Total amount received at the mines for the output.....	Casual- ties.	
No. of kegs.....	Cost to miners..	Winter....	Summer....	Miners.		Day and outside men.		Total.					Fatal.....	Non-fatal.....
				Winter....	Summer....	Winter....	Summer....	Winter.....	Summer.....					
15,701	\$31,402 00	27	21	575	337	227	132	802	469	347,047	\$1 17	\$406,932	3	2
26	52 00	2	1	137	91	28	19	165	110	44,066	1 44	63,780	1	1
9,423	18,842 05	23	18	378	232	120	71	498	303	183,933	1 15	211,444	1	1
17,363	33,448 25	48	43	420	370	195	157	615	527	372,218	1 04	386,560	1	1
392	784 00	6	3	72	28	16	11	88	37	21,549	1 26	27,135	1	1
		3	2	110	55	20	14	130	69	19,021	1 81	34,515	1	1
				76	38	19	15	95	53	21,562	1 60	34,417	1	1
18	36 00					5	8	5	8	1,430	1 84	2,530	1	1
33	60 00	2	1	15				15		1,730	1 26	2,188	1	1
40	80 00			8	4	1	4	9	8	1,447	1 80	2,617	1	1
		2	1	50	40	12	8	62	48	16,681	1 50	25,021	1	1
		2	1	9		3		12		2,280	1 50	3,420	1	1
2	4 50			5	2	2	1	7	3	1,265	2 25	2,846	1	1
				40	8			42	8	5,393	1 40	7,589	1	1
		8	7	160	130	38	30	196	160	42,861	1 84	77,946	1	1
2,873	5,735 75	9	10	276	210	75	58	351	268	103,267	1 50	154,385	1	1
				19	15	3	2	22	17	3,685	1 90	6,923	1	1
		4	3	90	50	25	18	115	68	20,000	2 50	50,000	1	1
81	62 25			36	18	6	3	42	21	9,695	1 53	14,983	1	1
70	140 00	79	46	1,570	813	335	188	1,905	1,001	439,217	1 62	709,349	1	1
		11	234	182	44	40	278	222		85,459	1 62	138,529	1	1
				10	2	2	1	12	3	1,177	2 25	2,651	1	1
35,912	71,824 00	76	66	1,580	1,526	521	576	2,101	2,102	1,025,213	1 01	1,042,327	7	10
		1		4				4		480	1 50	720	1	1
4	11 00			6	4			6	4	1,445	1 20	1,738	1	1
40	80 00			4	4			4	4	1,674	1 50	2,511	1	1
7	14 00			10	1			10	2	1,680	1 69	2,790	1	1
				13	6	3	2	16	8	2,000	2 50	5,000	1	1
		24	23	439	316	89	79	528	395	139,456	1 39	192,530	1	1
7	14 00	2	2	70	54	12	9	82	63	25,238	1 22	31,015	1	1
10,305	20,395 25	37	32	767	646	204	174	971	820	432,655	1 11	480,745	1	4
		38	26	898	574	172	118	1,068	692	264,900	1 59	405,708	1	1
54	106 00			27	10	8	3	35	13	4,539	1 74	7,908	1	1
				9	2	2		9	2	942	1 94	1,830	1	1
3	5 50	2	2	18	15	4	4	22	19	3,800	1 30	4,900	1	1
8,320	16,588 25	27	23	221	187	123	72	344	259	164,972	1 03	170,246	3	16
100,622	\$189,684 80	422	341	8,354	5,968	2,312	1,818	10,666	7,786	3,813,527	\$1 24	\$4,716,331	15	16

TABLE VII—Showing by Counties, kind and number of coal mines for mining and prices received for the coal at the mines, total out-

Office number.....	Name of company or mine owners.	Name of operator.	No. of days worked..	Kind of opening			Depth of shaft.....	Thickness of coal... Feet.....	Kind of power.			How ventilated.	
				Shaft.....	Slope.....	Strip-pit.....			Steam.....	Hand.....	Electricity.....	Natural.....	Furnace.....
1	American Fuel Co. M. No. 1	American Fuel Co.	196	1	1	1	3	6	1	1	1	1	1
2	Besanko Robt.	Robt. Besanko.	270	1	1	1	45	4	1	1	1	1	1
3	Culler Bro's. (Culler Mine)	Thos. Scott.	70	1	1	1	3	10	1	1	1	1	1
4	C. B. Havens (Danforth) ..	C. B. Havens & Co.	271	1	1	1	50	3	1	1	1	1	15
5	K. C. Midland C. & M. Co.	K. C. Midland, C. & M. C.	223	2	1	1	80	3	2	1	1	1	36
6	McCabe, Patrick.	McCabe, Patrick.	120	1	1	1	23	4	1	1	1	1	1
7	Manf. C. & O. Co. M. 1 & 2.	Manufactures, C. & O. Co	85	1	1	1	3	10	1	1	1	1	10
8	Motter Noah (Miller Mine).	F. J. Miller.	106	1	1	1	4	1	1	1	1	1	1
9	Oak Block Coal Co. (Cor.) ..	Oak Block Coal Co. (Cor.)	230	1	1	1	3	6	1	1	1	1	1
10	Paris, John.	John Paris.	28	1	1	1	3	6	1	1	1	1	1
11	Rombauer Coal Co.	Rombauer Coal Co. M. 1.	192	2	1	1	50	3	2	1	1	1	10
12	Scott & Son (Hazel Creek).	Rombauer Coal Co. M. 2.	140	1	1	1	72	3	2	1	1	1	12
		D. C. Scott.	140	1	1	1	4	1	1	1	1	1	1
			1,931	7	4	3	...	...	6	7	1	2	6 5

AUDRAIN													
1	Bevan, Wm. (Curver Creek Mine.) ..	Wm. Bevan.	80	1	1	1	35	2	4	1	1	1	1
2	Carr, Paris.	Paris Carr.	120	1	1	1	17	2	8	1	1	1	1
3	Farber Mine.	Lawder & Peterson.	260	1	1	1	104	2	6	1	1	1	7
4	Hafner, O. F. (Worcester Mine) ..	Jos. Holtkamp.	240	1	1	1	12	2	8	1	1	1	1
5	Johnston, R. E. (McGuire Mine) ..	G. W. McGuire.	120	1	1	1	43	2	8	1	1	1	1
6	Krieger Coal Co.	Oscar Krieger.	240	1	1	1	110	2	6	1	1	1	1
7	Standard Coal Co.	Joe. Sanford.	225	1	1	1	73	2	4	1	1	1	1
8	Mississippi Glass Co.	Mississippi Glass Co.	135	1	1	1	65	2	4	1	1	1	48
9	Vandalia Coal Co.	Vandalia Coal Co.	210	1	1	1	75	2	4	1	1	1	8
			1,630	8	2	...	...	...	4	6	...	5	2 3

BARTON													
1	Bell, J. W.	J. W. Bell.	40	1	1	1	1	1	1	1	1	1	1
2	Chancellor, H. C., Sr.	Joxie Brown.	120	1	1	1	2	2	1	1	1	1	1
3	Divine, W. B.	W. B. Divine.	60	1	1	1	2	2	1	1	1	1	1
4	Gray Coal Co.	F. R. Gray.	108	1	1	1	3	4	1	1	1	1	1
5	Hanshaw, W. H.	W. H. Hanshaw.	90	1	1	1	2	2	1	1	1	1	1
6	Lasby, M.	G. W. Claunch.	270	1	1	1	3	4	1	1	1	1	1
7	Miller, W. L.	Sanford Bro. Mer. Co.	167	1	1	1	1	1	1	1	1	1	1
8	Prosser, J. J.	Prosser, Sanders & Sanders.	70	1	1	1	2	4	1	1	1	1	1
9	Richards, Louise Mrs.	C. A. Richards.	55	1	1	1	2	2	1	1	1	1	1
10	Spear, M. M.	M. M. Spear.	50	1	1	1	2	2	1	1	1	1	1
11	Stockton, E.	E. Stockton.	60	1	1	1	2	2	1	1	1	1	1
12	Travis Mine.	Joe Travis.	90	1	1	1	20	2	2	1	1	1	1
13	Van Felt, O.	C. F. Swigert.	192	1	1	1	33	3	6	1	1	1	1
14	Walser, G. H.	Rogers & Nicholson.	200	1	1	1	3	6	1	1	1	1	1
15	Walser, G. H.	Geo. Mellor.	70	1	1	1	4	4	1	1	1	1	5
16	Wear Coal Co., Mine No. 3	Wear Coal Co.	222	1	1	1	44	3	1	1	1	1	10
17	Wear Coal Co., Mine No. 10	Wear Coal Co.	57	1	1	1	38	3	1	1	1	1	12
18	West'n Coal Co., Mine No. 8	Western Coal Co.	244	1	1	1	56	3	1	1	1	1	16
19	West'n Coal Co., Mine No. 9	Western Coal Co. (Hall & Fletcher.	255	1	1	1	210	1	1	1	1	1	1
			2,420	5	3	4	8	...	4	7	6	11	2 4

operated, working plan, kind of plant, number of employes, prices paid put and total receipts from the sale of the product for the year 1901.

COUNTY.

Pillar and room. Long-wall,.....	Amount of powder used and cost of same.		Mules worked.	Employees.						Price paid for mining.		Tons of coal mined...	Price received at mines per ton.....	Amount received for product.....	Office number.....	
	No. of kegs.	Cost... ..		Miners.		Others.		Total.		White.....	Summer....					
				Summer....	Winter....	Summer....	Winter....	Summer....	Winter....							Summer....	Winter....
1			14	14	94	73	27	27	121	100	\$ 82	\$ 82	38,951	\$1 43	\$55,931	1
1					10		2		12		80	80	5,785	1 37	7,231	2
1	8	\$16 00			2		1		3		80	80	300	1 25	375	3
1	5,600	11,200 00			110	24	80	16	190	40	65	65	102,030	1 13	116,864	4
2	2,919	5,838 00	13	7	70	70	35	35	105	105	70	70	42,432	1 20	50,000	5
1					10		2		12		80	80	2,800	1 25	3,500	6
1	930	1,860 00			68		18		86		65		18,531	1 20	22,237	7
1					7		1		8		80		1,258	1 31	1,651	8
1					40	20	8	4	48	24	82		15,000	1 50	23,000	9
1	15	30 00			4		1		5		75		230	1 25	287	10
2	6,229	12,458 00			150	150	50	50	200	200	65		115,530	1 05	121,108	11
1					10		2		12		77		4,200	1 25	5,250	12
4 10	15,701	\$31,402 00	27	21	575	337	227	132	802	469			347,047	\$1 17	\$406,932	.....

COUNTY.

1					3		1		4		\$1 00	\$1 00	300	\$1 50	\$450	1
1					3	1	1		4	1	75	75	520	1 25	650	2
1	2	\$4 00	2	1	30	20			4	34	91	91	13,000	1 47	19,110	3
1	4	8 00			4	2			4	2	1 12	1 00	864	1 50	1,296	4
1					6		2		8		75	75	1,200	1 25	1,500	5
1	20	40 00			25	16	6	5	31	21	91	91	8,041	1 45	10,228	6
1					16	12	2	2	18	14	91	91	4,384	1 50	6,576	7
1					10	10	2	2	12	12	91	91	2,800	1 35	3,780	8
1					40	30	10	6	50	36	91	91	14,957	1 35	20,190	9
6 4	26	52 00	2	1	137	91	28	19	165	110			44,066	\$1 44	\$63,780	.....

COUNTY.

1			2	2		2		4		\$1 50	\$1 50	120	\$2 00	\$240	1	
					6			6		90	90	1,296	1 47	1,905	2	
1					4			6		1 00	1 00	200	1 50	300	3	
						10		10				2,160	1 50	3,240	4	
	12	\$22 80			3			3		65	65	552	1 25	690	5	
					1	1	3	3	4	4		2,000	1 15	2,300	6	
					9			9		65	65	3,004	1 25	3,755	7	
					12	2		2	2	70	70	280	1 25	350	8	
	11	19 25			4			4				550	1 25	687	9	
			2		3			3		1 25	1 25	160	2 25	360	10	
1							1	1				120	1 25	150	11	
1					12			12				211	1 25	263	12	
1	328	652 00	1	1	10	5	4	2	14	7	65	65	3,268	1 20	3,921	13
1			1	1	8	5	2	1	10	6	65	65	1,700	1 25	1,955	14
1					2			2			65	65	230	1 20	278	15
1	3,031	6,062 00	6	6	65	75	24	25	89	100	65	65	58,884	1 15	67,716	16
1	836	1,672 00	5		108		26		134		65	65	16,493	1 15	18,986	17
1	4,408	8,816 00	6	6	122	122	36	36	158	158	65	65	74,755	1 15	86,370	18
1	799	1,598 00	2	2	35	20	4	4	39	24	65	65	18,000	1 00	18,000	19
11	\$9,423	\$18,842 05	23	18	378	232	120	71	498	303			183,983	\$1 15	\$211,444	20

STATISTICS OF

BATES

Office number.....	Name of company or mine owner.	Name of operator.	No. of days worked..	Kind of opening.			Depth of shaft.....	Thickness of coal.. Feet.	Kind of power.			How ventilated.
				Shaft.....	Slope.....	Drift.....			Steam.....	Hand.....	Electricity..	
1	Ackerman, Jas.....	Jas. Ackerman.....	90	1	1	1	106	1	1	1	1	
2	Brooks, J. J.....	J. J. Brooks.....	244	1	1	1	400	1	1	1	1	
3	Craig, T. A.....	T. A. Craig.....	100	1	1	1	304	1	1	1	1	
4	Darby, J. W.....	W. H. Mace.....	250	1	1	1	304	1	1	1	1	
5	Engels, L. G.....	J. T. Engels.....	110	1	1	40	406	1	1	1	1	
6	Kas., Mo., Land & C. Co.	W. W. Peeler.....	225	1	1	1	406	1	1	1	1	
7	Lewis, O. H.....	Harris Gerrodo.....	90	1	1	16	10	1	1	1	1	
8	Martin, F. M.....	F. M. Martin.....	260	1	1	1	300	1	1	1	1	
9	Metzler Coal Co.....	Metzler Coal Co.....	20	1	1	1	302	1	1	1	1	
10	Mo. Pac. R. R. Co.....	J. Newcomb.....	90	1	1	1	306	1	1	1	1	
11	Parker, L. W.....	E. C. Hines.....	120	1	1	1	300	1	1	1	1	
12	Pearson, Peter.....	Peter Pearson.....	263	1	1	1	302	1	1	1	1	
13	Prose Mine.....	Briscoe & Prose Co.....	90	1	1	1	302	1	1	1	1	
14	Rankin Mine.....	B. Cooper.....	15	1	1	1	206	1	1	1	1	
15	Rich Hill Coal Co.....	Rich H. C. Co., M. No. 15.	226	1	1	105	310	1	1	1	1	15
16	" " " " " " " "	" " " " " " " "	266	1	1	1	300	1	1	1	1	8
17	" " " " " " " "	Contract Mines.....	104	1	1	1	400	1	1	1	1	
18	" " " " " " " "	Berteau Bros.....	175	1	1	1	406	1	1	1	1	
19	" " " " " " " "	J. C. Griggs.....	30	1	1	1	408	1	1	1	1	
20	" " " " " " " "	W. H. Lowder.....	30	1	1	1	500	1	1	1	1	
21	" " " " " " " "	D. McComb.....	173	1	1	1	103	1	1	1	1	
22	" " " " " " " "	R. Pearson.....	180	1	1	1	406	1	1	1	1	
23	" " " " " " " "	D. Reese.....	240	1	1	130	303	1	1	1	1	12
24	Scott, Sarah.....	Vernon Coal Co.....	50	1	1	1	304	1	1	1	1	
25	Selders Bros.....	Hensley & Mullis.....	80	1	1	1	304	1	1	1	1	
26	Steele, D. W.....	Selders Bros.....	150	1	1	33	300	1	1	1	1	
27	Tatley, J. V. Coal Co.....	D. W. Steele.....	220	1	1	1	210	1	2	1	1	
28	Thomas Mark.....	J. V. Tatley.....	100	1	1	1	303	1	1	1	1	
29	Walnut Land and Coal Co.	Mark Thomas.....	50	1	1	1	300	1	1	1	1	
30	Western Coal and Mining Co.....	C. T. Bishop.....	64	1	1	1	300	1	1	1	1	
31	" " " " " " " "	S. L. Queen.....	90	1	1	1	210	1	1	1	1	
		J. C. Rankin.....	4,195	5	8	218			517	6	112	6 3

BOONE

1	Beasley, W. H.....	John Gossett.....	56	1	1	1	306	1	1	1	1	
2	Buckler, H. T.....	H. T. Buckler.....	120	1	1	1	400	1	1	1	1	
3	Columbia Coal Co.....	R. E. Henry.....	180	1	1	55	300	1	1	1	1	
4	Davis, I. R.....	Isaac R. Davis.....	60	1	1	1	304	1	1	1	1	
5	Gilvin mine.....	J. R. Gilvin.....	90	1	1	1	300	1	1	1	1	
6	Keene, J. H.....	Jas. H. Keene.....	241	1	1	127	306	1	1	1	1	
7	McKenzie, J. F.....	J. F. McKenzie.....	30	1	1	1	400	1	1	1	1	
8	Prather, S. S.....	W. R. Prather.....	206	1	1	1	308	1	1	1	1	
9	Robinson, J. W.....	T. H. Hord.....	90	1	1	1	306	1	1	1	1	
10	Sublett, S. T.....	S. T. Sublett.....	60	1	1	1	206	1	1	1	1	
11	White Bros.....	J. H. & Wm. White.....	70	1	1	1	308	1	1	1	1	
			1,203	3	2	4 2			1	3	7	7 4

CALDWELL

1	Caldwell Coal Co.....	Caldwell Coal Co.....	223	1	1	1	527	106	1	1	1	10
2	Dripping Springs Coal Co.	Dripping Spr'gs Coal Co.	123	1	1	1	240	106	1	1	1	
			346	2	1	1		2	1	1	1	1

COAL MINES—Continued.

COUNTY

Pillar and room. Long wall.	Amount of powder used and cost of same.		Mules worked.	Employees.						Price paid for mining.		Tons of coal mined.	Price received at mines per ton.	Amount received for product.	Office number.	
				Miners		Others.		Total.								
	No. of kegs.	Cost.		Summer.	Winter.	Summer.	Winter.	Summer.	Winter.	Summer.	Winter.					
1	4	\$8 00		4	4	4	4	4	4	\$ 75	\$ 75	1,000	\$1 25	\$1,250	1	
1	120	210 00		4	4	1	1	5	5	75	75	2,189	1 25	2,735	2	
1	35	59 50		3	4	7		10				3,420	1 25	3,025	3	
1	115	191 25	1	10	8	8	4	18	12	45	45	3,750	1 25	4,687	4	
1	72	144 00						10		55	55	1,800	1 25	2,250	5	
1	20	35 00				3		3		75	75	1,045	1 50	1,567	6	
1	13	22 75						3				600	1 40	640	7	
1	20	37 50			3			3	3	75	75	1,228	1 00	1,228	8	
1	10	17 50				6		6		75	75	400	1 00	500	9	
1	5	8 25				2		2		75	75	410	1 25	553	10	
1	30	52 50				4		4		75	75	1,000	1 00	1,000	11	
1	129	225 75	3			3	3	3	3	55	55	2,280	1 00	2,282	12	
1	4	7 00		3				3		75	75	500	1 25	625	13	
1	4	7 00		2				2		75	75	60	1 00	60	14	
1	9,249	18,498 00	20	20	180	180	97	97	277	277	55	55	194,430	1 01	195,392	15
1	1,361	2,722 00	3	3	25	25	8	8	33	33	55	55	23,006	1 04	24,144	16
1																17
1																18
1	5,605	10,210 00	18	18	138	138	41	42	179	180	55	55	122,347	1 04	127,400	19
1																20
1																21
1																22
1	6	10 50		2				2		75	75	300	1 10	330	23	
1	27	47 25		5		3		8		55	55	816	1 25	1,020	24	
1	185	323 75		8	5	2	1	10	6	60	60	2,800	1 35	3,500	25	
1	300	525 00	1	16	7	3	1	19	8	50	50	7,961	1 25	9,951	26	
1	9	15 75		2				2		75	75	400	1 40	560	27	
1	30	52 50	1	3				3		50	50	316	1 20	379	28	
1	6	10 50		3				3		55	55	400	1 50	600	29	
1	4	7 00		4		1		5		75	75	760	1 15	864	30	
15	17,363	\$33,448 25	48	43	420	370	195	157	615	527			372,218	\$1 04	\$386,560	31

COUNTY.

1	2	\$4 00		2				2		80	80	250	\$1 30	\$325	1
1				4				4		75	75	960	1 00	960	2
1	75	150 00	2	18	10	6	5	24	15	80	80	5,000	1 40	7,000	3
1	10	20 00		2		1		3		75	75	250	1 12	280	4
1				3		1		4		70	70	562	1 00	562	5
1	191	382 00	2	14	9	4	2	18	11	80	80	6,969	1 32	9,041	6
1								3		80	75	200	87	175	7
1	110	220 00	1	20	7	3	1	23	8	80	75	6,018	1 25	7,520	8
1	4	8 00						4		75	75	800	1 00	600	9
1				1		1		2		75	75	120	1 25	150	10
1				4				4		75	75	622	1 00	622	11
3	7	392	\$784 00	6	3	72	26	18	11			21,549	\$1 26	\$27,135	

COUNTY.

1			3	2	80	40	14	6	10	94	50	\$1 25	\$1 25	15,591	\$1 58	\$25,940	1
1					30	15	6	4		36	19	1 35	1 35	3,430	2 50	8,575	2
2			3	2	110	55	20	14	130	69				19,021	\$1 61	\$34,515	

STATISTICS OF

OALLAWAY

Office number.....	Name of company or mine owner.	Name of operator.	No. of days worked...	Kind of opening.			Depth of shaft.....	Thickness of coal... Feet....	Kind of power.			How ventilated.
				Slope	Drift...	Strip-pit...			Steam	Hand	Electricity	
1	Castle, Wm.....	Wm. Castle.....	258	1	1	1	55	2	1	1	1	1
2	Curd, Edwin.....	Edwin Curd.....	144	1	1	1	30	2	1	1	1	1
3	Curd, Edwin.....	John Marsinkhoff.....	160	1	1	1	30	2	1	1	1	1
4	Fulton Fire Brick Co.....	F. F. B. & M. Co.....	142	1	1	1	100	4	1	1	1	60
5	Harris, John.....	John Harris.....	208	1	1	1	40	6	1	1	1	1
6	Hornor, Jos.....	R. F. Thorp.....	210	1	1	1	12	6	1	1	1	1
7	Reed, J. F.....	J. F. Reed.....	125	1	1	1	12	6	1	1	1	1
8	Smith, Jas.....	Jas. Smith.....	185	1	1	1	12	6	1	1	1	1
9	Smith, Jas.....	Wm. Simmons.....	200	1	1	1	50	6	1	1	1	1
10	Sims Bro's Coal Co.....	Sims Bros. Coal Co.....	250	1	1	1	100	6	1	1	1	5
			1,952	7	1	3	...	...	2	5	3	3 5 2

CARROLL

1	Farr, Robt.....	Robt. Farr.....	120	1	1	1	2	1	1	1	1	1
2	Gallaher, W. P.....	W. R. Gallaher & B. White.....	70	1	1	1	2 2	1	1	1	1	1
3	Hughes, Wm.....	Wm. Hughes.....	60	1	1	1	110	1	1	1	1	1
4	Ogle, W. F.....	W. F. Ogle.....	190	1	1	1	1 8	1	1	1	1	1
			440	4	4	4	...	2	1	1	1	1

CEDAR

1	Beebe, E. M.....	Beebe, E. M.....	302	1	1	1	1 8	1	1	1	1	1
2	Duncan, J. C.....	H. Farvin.....	60	1	1	1	2 2	1	1	1	1	1
3	Dial, J. Mrs.....	John Conner.....	10	1	1	1	2 2	1	1	1	1	1
4	Poague, G. M.....	G. M. Poague.....	60	1	1	1	4 4	1	1	1	1	1
5	Schroder, C. M.....	C. M. Schroder.....	90	1	1	1	2 2	1	1	1	1	1
6	Smith, Wm.....	Wm. Smith.....	50	1	1	1	2 2	1	1	1	1	1
7	Young, J. H.....	G. A. Smith.....	25	1	1	1	3	1	1	1	1	1
			597	5	2	2	...	1 6	6	1	1	1

CHARITON

1	Huenten, John.....	Robt. Brewer.....	90	1	1	1	1 6	1	1	1	1	1
2	Isle, R. W.....	R. W. Isle.....	10	1	1	1	1 5	1	1	1	1	1
3	Kahler, W. J.....	W. J. Kahler.....	15	1	1	1	1 6	1	1	1	1	1
4	Wachter, H.....	H. Wachter.....	200	1	1	1	65	2 6	1	1	1	1
			315	1	1	2	...	2 2	3	1	1	1

OLAY

1	Missouri City Coal Co.....	Missouri City Coal Co.....	229	1	1	1	56	1 9	1	1	1	10
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COLE

1	Edwards & Kauffman.....	Edwards & Kauffman.....	82	1	1	1	66	27	1	1	1	1
2	Urban, Wm.....	Wm. Urban.....	71	1	1	1	50	18	1	1	1	1
			153	2	2	2	...	2	2	2	2	2

COAL MINES—Continued.

COUNTY.

Pillar and room. Long wall.....	Amount of powder used and cost of same.		Mules worked.	Employees.			Price paid for mining.		Tons of coal mined....	Price received at mines per ton.....	Amount received for product.....	Office number.....
				Miners.	Others.	Total.						
	No. of kegs.	Cost.....		Winter....	Summer....	Winter....	Winter....	Summer....				
1				7	2	1	1	2	1 10	1 10	\$3,024	1
1				6				6	1 12	1 12	2,142	2
1				4				4	1 00	1 00	1,620	3
1				20	20	10	10	30	1 06	1 06	5,737	4
1				7	3	2	1	9	1 06	1 06	4,500	5
1				3				3	1 06	1 06	1,500	6
1				6				6	1 00	1 00	2,062	7
1				3	1	1	1	4	1 06	1 06	3,296	8
1				4	1	1	1	5	1 06	1 06	4,536	9
1				8	6	2	1	10	1 06	1 06	6,000	10
8	2			78	38	19	15	95				
									21,562	\$1 60	\$34,417	

COUNTY.

1	8	16 00				2	2	\$1 25	\$1 25	360	\$1 75	\$630	1
1	6	12 00				3	3			320	1 50	500	2
1	4	8 00				2	2			120	2 00	240	3
1						3	3			630	2 00	1,260	4
4	18	\$36 00				5	8			1,430	\$1 84	\$2,630	

COUNTY.

1	30	\$54 00	2	1	2		2	75	75	800	\$1 12	\$900	1
1					2		2			130	1 62	211	2
1					2		2	75	75	30	1 25	37	3
1					2		2	1 25	1 25	150	1 50	225	4
1					2		2	75	75	400	1 25	500	5
1					2		2	1 25	1 50	180	1 50	240	6
1	3	6 00			2		2	1 00	1 00	60	1 25	75	7
2	5	\$30 00	2	1	15		15			1,730	\$1 26	2,188	

COUNTY.

1					2		2	1 25	1 25	270	\$2 00	\$540	1
1					2		2			20	2 00	40	2
1					1		1			17	2 50	42	3
1	40	\$80 00			6	4	1	1 18	1 18	1,140	1 75	1,995	4
3	1				8	4	1			1,447	\$1 80	\$2,617	

COUNTY.

1			2	1	50	40	12	8	62	48	\$1 00	95	16,681	\$1 50	\$25,021	1
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COUNTY.

1			1		6		2		8		\$1 10		1,640	\$1 50	\$2,460	1
1			1		3		1		4		1 10		640	1 50	960	2
2			2		9		3		12				2,280	\$1 50	\$3,420	

STATISTICS OF

COOPER

Office number.....	Name of company or mine owner.	Name of operator.	No. of days worked.	Kind of opening			Depth of shaft. Feet.....	Thickness of coal. Inches.....	Kind of power.		How ventilated.	
				Shaft.....	Slope.....	Strip-pit.....			Steam.....	Hand.....	Electricity.....	Far-nat. Natural.....
1	Hazel Springs Coal Mines.	C. W. Hazell.....	300	1			1	6		1	1	

DADE

1	Hickman, O.....	A. Leonard.....	300	1			3	4	1		1	
2	McCluey, Robt.....	Robt. McCluey.....	90	1			3	9	1		1	
3		J. A. Clayton.....	50	1			3	3	1		1	
4	McElhinney, B. D.....	Finney & Simmonds.....	105	1			24	1	1		1	
5	McCombs Mine.....	Thos. Gardner.....	112	1			40	6	1		1	
			565	2	3				1	4		5

GRUNDY

1	Grundy County Coal Co..	Grundy County Coal Co.	235	1			174	1	6	1		10
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HENRY

1	Beedy, M.....	W. E. Hughes.....	175	1			25	4	6	1		1
2	Bigum Mine.....	Reese & Bigum.....	50	1			30	3	9	1		1
3	Blair, John O.....	Cooper Creek Coal Co..	220	1			20	3	0	1		1
4	Bowen Bro.....	Bowen Bro.....	300	1			35	6	1			1
5	Burgess, L. L.....	L. L. Burgess.....	60		1		12	0				
6	Chappell, J. R.....	C. W. Field.....	68		1		3	6		1		
7	Clark, David.....	David Clark.....	60		1		1	2		1	1	
8	Co-operative Coal Co.....	Co-operative Coal Co..	226	1			76	6	1			12
9	Daley, G. G.....	E. A. Barnhart.....	165	1			25	0	1		1	
10	Demaree, H. T.....	H. T. Demaree.....	138		1		3	0	1			1
11	Dickey, W. S. Clay Mfg. Co.....	W. S. Dickey, Clay Mfg. Co.	264	1			3	0	1			1
12	Eugeman, Chas.....	Chas Eugeman.....	180		1		12	0		1	1	
13	Geahart, Theo.....	Theo. Geahart.....	30		1		4	0	1			1
14	Hines, F. B.....	C. W. Field.....	60	1			35	4	0	1		1
15	Hobbs, H. B.....	Denzler & Church Coal Co.	80	1			3	0	1			1
16	Hurst, Jas.....	J. Hurst.....	196	1			52	3	0	1		1
17	Jordan Coal Co.....	Jordan Coal Co.....	212	1			35	2	8	1		1
18	Miller, W. J.....	L. M. Beaman.....	300	1			40	5	0	1		1
19	Owen, J.....	C. Ghupert & Grover.....	60		1	1	12	6		1	1	
20	Owen, W. E.....	E. A. Barnehart.....	120	1			30	0	0			1
21	Rigg, D. B.....	Chapman & Dalton.....	211		1		12	8		1		1
22	Rusk, Wm.....	C. Roady.....	130	1			35	12	6	1		1
23	Salmon & Salmon.....	Wm. Reese.....	109	1			36	12	6	1		1
24	Smith, J. W.....	J. W. Smith.....	100	1			23	12	8	1		1
25	Teeman, Jno.....	Jno. Teeman.....	37		1		12	0	1			1
26	Thompson, Jno.....	J. O. Thompson.....	180	1			65	3	4	1		10
27	Tyree, Jos.....	Jas. Tyree.....	175		1		1	0	1			1
28	Wilson, Thos. P.....	Hurt & O'Neal.....	60		1		1	6		1	1	
			3,972	15	2	2	10		9	14	5	110
											15	3

COAL MINES—Continued.

COUNTY.

Office number.....	Amount received for product.....	Price received at mines per ton.....	Tons of coal mined...	Price paid for mining.		Employees.			Amount of powder used and cost of same.	Pillar and room.....	Long-wall						
						Total.	Others.	Miners.									
				Summer... Winter.....	Summer... Winter....							Summer... Winter.....	Summer... Winter.....	Cost	No. of kegs.		
1	\$2,846	\$2 25	1,285	\$1 37	\$1 50	3	7	1	2	5	2	2	1	2	\$4 50	2	1

COUNTY.

1	1	...	...	...	10	8	...	...	10	8	\$ 75	\$ 75	2,000	\$1 25	\$2,500	1
1	1	...	...	...	4	...	1	...	5	...	1 00	1 00	80	1 50	120	2
1	1	...	...	...	6	...	...	...	6	...	1 00	1 00	250	1 50	375	3
1	1	...	...	...	10	...	...	...	10	...	1 00	1 00	1,000	1 50	2,400	4
1	1	...	...	...	10	...	1	...	11	...	1 00	1 50	1,463	1 50	2,194	5
5	...	...	...	...	40	8	2	...	42	8	...	...	5,398	\$1 40	\$7,589	...

COUNTY.

1	...	...	...	8	7	160	130	36	30	196	160	1 15	1 15	42,361	\$1 84	\$77,946	1
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COUNTY.

1	...	...	...	...	3	...	1	...	4	...	\$ 75	\$ 75	935	\$1 75	\$1,636	1
1	15	\$30 00	...	...	5	...	...	...	5	...	75	75	450	1 60	720	2
1	250	500 00	...	...	16	12	2	18	14	...	90	1 55	7,960	1 55	12,388	3
1	5	10 00	...	2	30	30	7	37	37	...	80	80	17,578	1 32	23,202	5
1	...	...	...	2	1	...	...	2	...	...	75	75	180	1 50	270	6
1	...	...	...	...	2	...	...	2	...	...	...	...	378	1 62	614	7
1	1	2 00	...	...	...	...	...	...	...	...	...	...	200	1 25	250	8
1	...	...	...	...	27	18	8	7	35	25	80	80	8,528	1 33	11,370	9
1	...	...	...	...	5	2	1	1	6	3	1 00	100	900	1 50	1,350	10
1	100	200 00	...	...	11	8	4	2	15	10	95	95	3,078	1 50	4,617	11
1	723	1,446 00	3 3	24	24	9	9	33	33	...	85	85	15,325	1 60	24,520	12
1	1	2 00	2 2	2	1	...	...	2	1	...	...	...	360	1 75	630	13
1	10	17 50	...	2	...	3	...	5	...	...	...	...	285	1 12	321	14
1	19	38 00	...	3	...	1	...	4	...	...	75	75	486	1 25	607	15
1	40	80 00	...	4	...	4	...	8	...	...	95	95	800	1 60	1,280	16
1	280	560 00	...	13	13	2	1	15	14	...	95	95	4,066	1 70	6,940	17
1	774	1,548 00	1 1	45	40	7	7	52	47	...	85	85	11,693	1 61	18,827	18
1	130	260 00	...	18	8	4	4	22	12	...	62	62	10,802	1 50	16,203	19
1	3	5 25	...	3	1	...	...	3	1	...	1 00	1 00	340	1 50	510	20
1	30	52 50	...	6	4	2	2	8	6	...	1 00	1 00	1,080	1 50	1,620	21
1	...	...	1 1	25	25	10	10	35	35	...	80	80	8,000	1 40	11,200	22
1	...	...	...	5	1	...	...	6	1	...	963	1 50	963	1 50	1,440	23
1	250	500 00	...	12	18	2	3	14	21	...	1 15	1 05	4,800	1 60	7,680	24
1	...	...	...	2	...	...	...	2	...	...	...	...	300	1 50	450	25
1	1	2 00	...	...	...	2	...	2	...	...	...	...	110	2 00	220	26
1	240	480 00	...	10	5	1	1	11	6	...	...	...	3,200	1 45	4,640	27
1	1	2 50	...	...	...	2	...	2	...	...	...	...	350	2 00	700	28
1	...	...	...	...	...	2	...	2	...	...	...	...	120	1 50	180	...
720	2,873	\$5,735 75	9 10	276	210	75	58	351	288	...	...	...	103,267	\$1 50	\$154,385	...

STATISTICS OF

HOWARD

Office number.....	Name of company or mine owner.	Name of operator.	No. days worked.....	Kind of opening			Depth of shaft.....	Thickness of coal... Feet.....	Kind of power.			How ventilated.
				Strip-pit.....	Drift.....	Slope.....			Electricity.....	Hand.....	Steam.....	
1	W. R. Graham.....	W. R. Graham.....	258	1				1 00		1		1
2	Lockridge, B. M.....	Jno. Hinch.....	208	1				2 00		1		1
3	Morrison, A. W.....	R. S. Jackson.....	99	1				1 00		1		1
			505	3						3		3

JACKSON

1	Brush Creek Mine.....	Brush Creek C. M. Co. ...	264	1			465	1 09	1			10
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JOHNSON

1	Adams, G. W.....	J. W. Steele.....	120		1			1 10		1		1
2	Bancroft, G. M.....	DeWitt C. Woolery.....	140		1			2		1		1
3	Boyd & Son, Thos.....	Thos. Boyd & Son.....	115	1			20	3	1			1
4	Christopher, J. H.....	F. Millard.....	180	1				1		1		1
5	Hardin, John.....	L. M. Herrington.....	60		1			2 6		1		1
6	Hanna & Co., L. E.....	L. E. Hanna & Co.....	220	1			40	3 5	1			1
7	Macknod, Isaac.....	D. A. Bullick.....	208		1			2 2		1		1
8	Melley, M. B.....	M. B. Melley.....	90		1			1 8		1		1
9	Park, W. L.....	E. T. Strickland.....	95		1			2 3		1		1
			1,228	2	3	4			2	7		8 1

COAL MINES—Continued.

COUNTY.

Office number.....	Amount received for product.....	Price received at mines per ton.....	Tons of coal mined....	Price paid for mining.		Employees.						Amount of powder used and cost of same.		Pillar and room.....	Long wall.....
				Summer....	Winter.....	Total.		Others.		Miners		No. of kegs.	Cost.....		
						Summer....	Winter....	Summer....	Winter....	Summer....	Winter....				
1	2,872	\$1 65	1,750	\$1 25	7	7	7	1	6	6	.....	.....	1	1	
2	2,700	2 00	1,350	1 25	5	5	5	.....	5	5	.....	.....	1	1	
3	1,356	2 32	585	1 43	5	10	2	1	8	4	.....	.....	1	1	
	\$6,928	\$1 90	3,685		17	22	2	3	15	19			2	2	

COUNTY.

1				4	3	90	50	25	18	115	68	\$1 05	\$1 05	20,000	\$2 50	\$50,000	1
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COUNTY.

1				4				4		\$1 00	\$ 87	600	\$1 25	\$750	1
1	8	\$16 00		3	4	2		5	4	1 00	1 00	630	1 25	787	2
1	22	44 00		2		1		3		1 00	1 00	460	1 25	575	3
1	.....	.....	.....	4	4	.....	.....	4	4	1 00	1 00	1,440	1 25	1,800	4
1	.....	.....	.....	2	.....	.....	.....	2	.....	1 00	75	200	1 25	250	5
1	.....	.....	.....	8	4	3	3	11	7	60	50	3,150	1 25	3,937	6
1	.....	.....	.....	6	6	.....	.....	6	6	1 00	1 00	2,315	2 25	5,208	7
1	.....	.....	.....	4	.....	.....	.....	4	.....	1 25	1 25	495	1 75	866	8
1	1	2 25	.....	3	.....	.....	.....	3	.....	1 00	1 00	405	2 00	810	9
9	31	\$62 25	.....	36	18	6	3	42	21	.....	.....	9,695	\$1 53	\$14,983	

STATISTICS OF
LAFAYETTE

Office number.....	Name of company or mine owner.	Name of operator.	No. days worked.....	Kind of opening			Depth of shaft.....	Thickness of coal. Feet.....	Kind of power.				How ventilated.	
				Strip-pit.....	Drift.....	Slope.....			Steam.....	Horse.....	Hand.....	Electricity.....	Furnace.....	Fan-diam.....
1	Anderson, August.....	August Anderson.....	300	1				1	4	1			1	
2	Bell, W. H.....	W. H. Bell.....	150	1				1	8	1			1	
3	Bell & Greer.....	Bell & Greer.....	200	1				1	8	1			1	
4	Bonanza Coal Co.....	S. W. Brandau.....	200	1			71	1	8	1			1	
5	Buckhorn Coal Co.....	S. Mc. R. Calloway.....	85	1			118	4	4	1				10
6	Carter Coal Co.....	Carter Coal Co.....	230	1				1	7				1	
7	Chancellor, C. A.....	C. A. Chancellor.....	210	1				1	8				1	
8	Consolidat'd Farmers' C.O.	Con. Farmers' Coal Co.	190	3	1	1	75 30 20	1	6	2	1	2		10 3
9	Corder Coal Co.....	H. G. Asbury.....	105	1			75	1	9	1				6
10	Diamond Coal Co.....	C. S. Wilson, Mgr.....	158	1			58	1	10				1	
11	Dover Coal Co.....	Dover Coal Co.....	200	1			2				1		1	
12	Edmunds, J. A.....	J. A. Edmunds.....	160	1			40	2		1			1	
13	Farmers' Coal Co.....	G. B. Beatty, M. Nos. 2&3	273	1			45	1	6	1				8
14	Feith, Wm.....	Kratz & Grim.....	95	1				1	6	1			1	
15	Frerking, H. F.....	H. F. Frerking.....	160	1				1	6				1	
16	Gann, R. B.....	R. Y. Rowland.....	20	1				1			1		1	
17	Gaffin, O. M.....	O. M. Gaffin.....	282	1				1	6	1			1	
18	Geisendorfer, S. F.....	S. F. Geisendorfer.....	280	1				1	8				1	
19	Hendricks, S. B., Miss.....	M. Bartels.....	200	1				1	10				1	
20	Hendricks, S., Mrs.....	M. Bartels.....	235	1				1	6			1	1	
21	Hoffman, E. J.....	E. J. Hoffman.....	121	1				1	8	1			1	
22	Hohenwald Bros.....	C. R. Hohenwald.....	239	1			30	1	10	1			1	
23	Hudson, Jas.....	James Hudson.....	120	1			30	1	8	1			1	
24	Independence Coal M. Co.	L. B. Zeitz.....	175	1			46	1	6	1				5
25	Jones, Emma, Mrs.....	W. Alcorn.....	60	1				1	5				1	
26	Kreese, A. F.....	A. F. Kreese.....	135	1								1		
27	Labor Ex. Coal M. Ass'n.	Labor Ex. C. M. Ass'n.	220	1			105	1	6	1			1	
28	Lexington Coal Co.....	Lex. C. M. Co. G. O. Shaft	254	1			48	2		1				10
29	" " " " " " " " " "	Graddy " " " " " "	258	1	1			1	8			1	1	
30	" " " " " " " " " "	McDowell " " " " " "	51	1			43	1	10	1				10
31	" " " " " " " " " "	Midway " " " " " "	291	1			138	1	10			1		12
32	" " " " " " " " " "	No. 1 Riverton " " " " " "	72	1				1	10				1	
33	" " " " " " " " " "	Seawell " " " " " "	221	1				1	8			1		1
34	" " " " " " " " " "	Valley " " " " " "	291	1			87	1	10			1		12
35	Langest, J. R.....	J. S. Stephenson.....	280	1				1	6			1	1	
36	Looney Mine.....	Ballew & Gladish.....	224	1			80	1	6	1				8
37	McGrew, J. C.....	J. C. McGrew.....	176	1				1	10			1	1	
38	Macey, Estate Henry.....	Henry Macey Estate.....	168	1				1	8			1	1	
39	Mayview Coal Co.....	B. F. Cary.....	216	1			135	1	8	1			1	
40	Morgan, W. P.....	W. P. Morgan.....	250	1				1	8			1	1	
41	Morrison & Wentworth Bk	Star Coal Co.....	207	1				1	6	1			1	
42	Perry Thos.....	Thos. Perry.....	120	1				1	4			1	1	
43	Rosewell Bros. Jas.....	Jas. Rosewell & Bro.....	252	1			75	2					1	
44	Salt Fork, Coal Co.....	Salt Fork C. & M. Co.....	149	1			45	1	6					7
45	Silver Creek Coal Co.....	Jones & Mitchell.....	255	1			127	4	1					6
46	Strothers, F. T.....	F. T. Strothers.....	20	1				1	3			1	1	
47	Summers, M. W.....	M. W. Summers.....	225	1				2				1	1	
48	Walton Mines.....	J. T. Walton.....	220	1				1	6			1	1	
49	Walton J. F.....	Seth Spruce.....	125	1				1	6			1	1	
50	Wellington Coal Co.....	Lab. Ex. Branch No. 330.	183	1			45	1	6				1	
51	Williamson, C. T.....	Shackleford & Borland.	30	1				1				1	1	
52	Woskoski, M.....	Mike Woskoski.....	245	1				1	6				1	
53	Serat, M. E.....	M. E. Serat.....	290	1			112	1	10	1				12
			9,996	25	10	21	2		18	13	23	4	15	26
														17

COAL MINES—Continued.

COUNTY.

Pillar and room. Long-wall.....	Amount of powder used and cost of same.		Mules worked.	Employees.						Price paid for mining.		Tons of coal mined....	Price received at mines per ton.....	Amount received for product.....	Office number.....
				Miners			Others.									Total.
	No. of kegs.	Cost.....		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter				
1				4	4			4	4	\$1 17	\$1 17	930	\$1 75	\$1,627	1
1				8	1			6	6	1 12	1 12	700	1 75	1,125	2
1				40	10	10	2	50	12	1 18	1 08	1,700	1 75	2,975	3
1	70	\$140 00		17	5	5	2	23	12	1 05	1 05	7,000	1 65	12,950	4
1				50	50			55	52	70	1 25	1,487	1 50	2,230	5
1				11	7			11	7	1 23	1 25	13,125	1 68	22,050	6
1				1	1					1 18	1 18	1,815	2 00	3,630	7
5				8	4	150	75	20	10	1 00	1 00	25,200	2 00	50,400	8
1				24	24	9	7	33	31	1 00	1 00	3,623	1 76	6,368	9
1				40	30	10	9	50	39	1 00	1 00	14,280	1 78	25,497	10
1				50	30	3	3	53	33	1 17	1 17	6,000	1 60	9,600	11
1				9	6	3	2	12	8	1 15	1 15	1,547	1 60	2,475	12
1				60	10	30	2	90	12	1 00	1 00	21,010	1 67	35,812	13
1				2	2			3	2	1 00	1 00	399	1 75	682	14
1				6				6	2			336	1 62	546	15
1				2	1			3	15	1 25	1 25	120	1 75	210	16
1				35	12	4	3	39	15	1 03	1 05	11,434	1 65	18,864	17
1				4	2			5	4	1 12	1 12	1,145	1 50	1,732	18
1				4	3	1	1	5	4	1 25	1 25	500	1 75	875	19
1				2	2			2	2	1 10	1 10	875	1 50	1,012	20
1				2	2			2	2	1 12	1 12	360	1 56	563	21
1				5	4	1		6	4	1 12	1 12	1,590	1 68	2,679	22
1				5				3	3			560	1 67	1,050	23
1				1	1	20	10	3	2	1 10	1 10	3,875	1 45	5,329	24
1				3	3			3	3	1 25	1 25	172	1 75	301	25
1				5	2			5	2	1 25	1 25	800	2 00	1,600	26
1				55	40	4	3	59	43	1 17	1 17	15,463	1 60	24,576	27
1				9	8	135	116	23	21	1 05	93	73,974	1 44	106,517	28
2				9	8	72	60	50	41	63	56	49,330	1 56	77,094	29
1				4	2	57	30	12	8	1 06	93	5,704	1 42	8,141	30
1				2	2	45	35	29	20	1 06	1 06	19,363	1 48	28,691	31
1				4	2	50	34	12	10	1 06	1 06	7,259	1 45	10,558	32
1				4	2	51	35	7	5	1 06	1 06	15,873	1 44	22,958	33
1				4	2	47	38	25	9	1 06	1 06	29,099	1 62	44,291	34
1				6	6	1	1	7	7			2,200	2 00	4,400	35
1				2	2	20	6	3	46	1 00	1 00	8,000	1 50	12,000	36
1				225		15		240		1 05		29,799	1 81	53,897	37
1				42		9		51		1 00	1 00	7,607	1 60	12,210	38
1				12	12	3	3	15	15	1 00	1 00	4,000	1 90	7,600	39
1				2	2			2	2	1 00	1 00	4,657	1 75	1,150	40
1				33	14	8	2	36	16	1 17	1 17	8,887	1 70	15,107	41
1				2	2			2	2	1 25	1 25	410	2 00	820	42
1				4	4			4	4	1 25	1 25	1,512	1 75	2,646	43
1				3	3	45	36	12	10	1 00	1 00	13,280	1 75	22,960	44
1				1	1	10	4	2	1	70	70	3,080	1 10	3,388	45
1				2	2			2	2	1 25		60	2 00	120	46
1				4	2			4	2	1 12	1 00	1,350	1 75	2,362	47
1				8	6	1	1	9	7	1 20	1 20	2,840	1 75	4,970	48
1				1	1			1	1	1 20	1 20	125	1 75	218	49
1				2	1	12	6	3	2	1 07	1 07	3,155	1 70	5,365	50
1				2	2			2	2	1 20		80	1 75	140	51
1				2	2			2	2	1 00	1 00	625	1 75	1,083	52
1				3	1	40	20	10	6	1 05	1 05	15,293	1 40	21,376	53
52	6	70	\$140 00	79	46	1570	813	335	188	1905	1001	439,217	\$1 62	\$709,849	.....

STATISTICS OF

LINN

Office number.....	Name of company or mine owner.	Name of operator.	No. of days worked..	Kind of opening			Depth of shaft.....	Thickness of coal... Feet.	Kind of power.			How ventilated.
				Shaft.....	Slope.....	Drift.....			Steam.....	Hand.....	Electricity.	
1	Black Plume Mine.....	W. N. Nickell.....	215	1			150	2 02	1	1		1
2	Brookfield Coal Co.....	Brookfield Coal Co.....	205	1			153	04	1			1
3	Burdett Mine.....	Burdett & Johnson.....	211	1			140	03	1	1		1
4	Landreth.....	Landreth & Sons.....	223	1			130	02	1			1
5	Marcelline Coal Co.....	Marcelline Coal Co.....	201	1			185	02	1			1
6	Schaefer, Bernard.....	Bernard Schaefer.....	213	1			150	02	1			1
7	Williamson, L. R.....	L. R. Williamson.....	240	1			155	00	1			1
			1,568	7					3	4		3 3 1

LIVINGSTON

1	Adams, J. A.....	J. A. Adams.....	65	1			70	1 06	1			1
2	Cox's Star Mine.....	W. L. Cox & Bro.....	95	1			55	1 06	1			1
3	Gorlich, C.....	J. W. Tindell.....	119		1			1 04		1		1
			279	2	1				2	1		1 2

MACON

1	Bevier Black Diamond...	Bevier Black Diamond..	208	1			140	4	1			14
2	Helmet Mining Co.....	Helmet Mining Co.....	277	1			135	3 8	1			1 12
3	James, Levi Mrs.....	James Bros.....	230	1			50	4 6	1	1		1
4	Kansas & Texas Coal Co.	K. & T. C. Co., Mine No. 52	65	1				4 6	1			1
5	" " " " " "	" " " " " " No. 57	243	1				4	1			1
6	" " " " " "	" " " " " " No. 61	275	1			128	4	1			12
7	" " " " " "	" " " " " " No. 66	283	1	1		50	4 6	1			12
8	" " " " " "	" " " " " " No. 68	66	1				4	1			1
9	" " " " " "	" " " " " " No. 69	236	1				4	1			1
10	" " " " " "	" " " " " " No. 70	254	1				3 6	1			1
11	Murlin Coal Co.....	Murlin Coal Co.....	240	1			145	4	1			12
12	Northwestern O. & M. Co.	Northwest'n O. & M. Co..	40	2			65	1				10
13	Richmond, J. G.....	J. G. Richmond.....	204	1			140	4	1			10
14	Thomas Rowland.....	Rowland, Thomas.....	245	1			130	4	1			1
15	Watson Coal Co.....	W. S. Watson.....	241	1			90	4	1			12
			3,137	10	4	3			10	6	1	1 8 8

MONITEAU

1	Bowlen-Rohrback M. Co..	Bowlen-Rohrback M. Co.	40	1			60	18		1		1
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MONROE

1	Grier, W. T.....	Grier & Pool.....	125		1		1 6			1		1
2	Montgomery, W. J.....	W. J. Montgomery.....	270		1		1 8			1		1
			395		2					2		2

MORGAN

1	Hubbard & Moore.....	Hubbard & Moore.....	180		1		60	1				1
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COAL MINES—Continued.

COUNTY.

Office number.....	Amount received for product.....	Price received at mines per ton.....	Tons of coal mined....	Price paid for mining.		Employees.			Amount of powder used and cost of same.		Pillar and room.....	Long-wall.....
				Summer...	Winter ...	Total.	Others.	Miners				
									Summer...	Winter....			Summer...	Winter....	Cost.....	No. of kegs.
1	2,730	\$2 00	2,365	\$1 25	3	10	1	9	12	.....	.....	1
2	7,840	3 00	3,920	1 12	24	4	6	6	8	.....	.....	1
3	2,724	3 00	1,362	1 25	9	1	1	2	8	.....	.....	1
4	4,925	1 85	2,123	1 25	15	1	1	3	14	.....	.....	1
5	107,910	1 53	70,967	1 05	192	31	31	161	161	.....	.....	1
6	7,000	2 24	3,122	1 25	7	18	6	16	16	.....	.....	1
7	3,400	2 12	1,600	1 25	4	10	2	8	8	.....	.....	1
	\$138,529	\$1 62	85,459	.....	222	278	40	182	234	.....	.....	7

COUNTY.

1	.....	.....	.....	.....	2	.....	1	.....	3	.....	\$1 00	\$1 00	160	\$2 00	\$320	1
1	.....	.....	.....	.....	5	2	1	1	6	3	1 00	1 00	505	2 50	1,487	2
1	.....	.....	.....	.....	3	.....	.....	.....	3	.....	1 50	1 00	422	2 00	844	3
1	2	.....	.....	.....	10	2	2	1	12	3	.....	.....	1,177	\$2 25	\$2,651	

COUNTY.

1	1,216	\$2,432 00	20 20	69	48	18	18	87	66	\$ 60	\$ 60	41,608	\$1 12	\$46,809	1
1	796	1,592 00	6 6	95	100	32	33	127	133	75	72	56,207	1 12	63,233	2
1	40	80 00	.....	6	3	1	1	7	4	85	85	2,340	1 50	3,510	3
1	190	380 00	.....	21	18	16	16	37	37	80	60	3,836	91	3,490	4
1	3,581	7,162 00	.....	96	111	31	55	127	166	80	60	82,186	1 04	76,511	5
1	7,128	14,256 00	.....	260	250	181	227	441	477	60	60	199,813	1 00	199,637	6
1	5,158	10,316 00	.....	173	174	70	71	243	245	60	60	148,552	1 00	149,174	7
1	288	576 00	.....	27	12	12	39	.....	.....	60	60	6,004	92	5,504	8
1	1,411	2,822 00	.....	36	34	10	12	46	46	60	60	24,554	95	23,383	9
1	6,044	12,088 00	.....	135	158	32	41	167	197	60	60	122,887	94	114,853	10
1	2,300	4,600 00	8 8	175	175	40	40	215	215	60	60	89,000	1 05	93,450	11
1	5,212	10,424 00	30 20	400	390	60	60	460	450	60	60	177,018	1 11	196,619	12
1	3	6 00	.....	2	.....	.....	.....	2	.....	60	60	120	1 25	150	13
1	45	90 00	.....	2	.....	.....	.....	2	.....	85	85	966	1 50	1,492	14
1	2,500	5,000 00	12 12	83	83	18	18	101	101	60	60	70,122	92	64,512	15
1	35,912	\$71,824 00	76 66	1580	1526	521	576	2101	2102			1,025,213	\$1 01	\$1,042,327	

COUNTY.

1			1	4			4		\$1 10		480	\$1 50	\$720	1
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COUNTY.

1				3	1		3	1	\$ 85	\$ 85	500	\$1 25	\$625	1
1	4	\$11 00		3	3		3	3	1 00	87	945	1 25	1,111	2
2	4	11 00		6	4		6	4			1,445	1 20	\$1,736	

COUNTY.

1	40	\$80 00		4	4		4	4	\$ 50	\$ 50	1,674	\$1 50	\$2,511	1
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STATISTICS OF
MONTGOMERY

Office number.....	Name of company or mine owner.	Name of operator.	No. of days worked.	Kind of opening		Depth of shaft.....	Thickness of coal... Feet.....	Kind of power.		How ventilated.
				Scrip-pit....	Drift.....			Hand.....	Electricity..	
1	Hayes, F.	Hays Bros. & Johnson..	82	1	...	24	3	1	...	1
2	Whitehead, Henry.....	Henry Whitehead.....	100	1	...	30	3	1	...	1
			182	2	...			2	...	2

NODAWAY

1	Carpenter, Wroe.....	J. O. Pearson.....	180	1	...	72	1	1	...	1
2	Potts, Wm.....	W. Potts.....	160	1	...	20	1	1	...	1
3	Slaughter, J, Mary.....	J. S. Davis.....	160	1	...	40	1	1	...	1
			500	3	...			3	...	2

PUTNAM

1	Blackbird Coal Co.....	Blackbird Coal Co.....	181	1	...	35	2	1	...	1
2	Blankenship, Thos.....	Smith & Whitaker.....	156	1	...	300	3	1	...	1
3	Dixon, Hugh.....	Hugh Dixon.....	100	1	...	208	3	1	...	1
4	Dodge, C. E.....	C. E. Dodge.....	190	1	...	110	3	1	...	10
5	Fielding & Son, Thos.....	Star Coal Co.....	180	1	...	210	3	1	...	1
6	Guffey, Alex.....	Alex. Guffey.....	112	1	...	300	3	1	...	1
7	Lynch, Thos.....	Thos. Lynch.....	105	1	...	304	3	1	...	1
8	Mendota Coal Co.....	Mendota C. Co., M. 2&8.	245	1	...	210	1	1	...	112
9	"	Arnold Bros., Mine 9.....	50	1	...	210	1	1	...	1
10	"	H. Medlin, Mine 7.....	75	1	...	300	3	1	...	1
11	Minear, David.....	David Minear.....	120	1	...	304	3	1	...	1
12	Piercy, G. B.....	Smith & Lynch.....	10	1	...	302	3	1	...	1
13	Robison, Jake.....	Jake Robison.....	165	1	...	206	3	1	...	1
14	Rogers, J. W.....	Rogers Bros.....	120	1	...	300	3	1	...	1
15	Shean, Dan.....	Dan Shean.....	40	1	...	208	3	1	...	1
16	Trent, Wilson.....	Wilson Trent.....	10	1	...	300	3	1	...	1
			1,850	3	4	10	...	3	5	9
								9	6	2

RALLS

1	Barger, J. A.....	J. A. Barger.....	120	1	...	208	3	1	...	1
2	Fitzpatrick Bros.....	Fitzpatrick Bros.....	238	1	...	62	2	1	...	1
3	Perry Coal Co.....	Perry Coal Co.....	130	1	...	68	2	1	...	1
		Mine, No. 1.....	1	1	...	45	1	1	...	1
4	Ralls County Coal Co.....	Ralls Co. Coal Co., M. 2..	229	1	...	43	2	1	...	2
5	Salling Coal Co.....	Salling Coal Co.....	105	1	1	...	202	3	1	1
			822	4	1	1	...	4	3	3
								4	3	4

COAL MINES—Continued.

COUNTY.

Office number.....	Amount received for product.....	Price received at mines per ton	Tons of coal mined....	Price paid for mining.		Employees.						Amount of powder used and cost of same.	Pillar and room.....	Long-wall.....
				Summer... Winter ...	Summer... Winter ...	Total.	Others.		Miners.					
							Summer... Winter ...	Summer... Winter....	Summer... Winter....	Summer... Winter....				
1	\$1,890 900	\$1 75 1 50	1,080 600	\$1 00 1 00		6 4	2 2	1 1	1 1	6 4		\$6 00 8 00	3 4	1
2	\$2,790	\$1 69	1,680			10	2	1	1	10		\$14 00	7	3

COUNTY.

1 ..				3	2	1	4	2	\$1 50	\$1 25	600	\$2 50	\$1,500	1
1 ..				2	2		2	2	2 00	2 00	500	2 50	1,250	2
1 ..				8	2	2	10	4	1 75	1 75	900	2 50	2,250	3
3 ..				13	6	3	16	8			2,000	2 50	5,000	

COUNTY.

1 ..				40	30	10	7	50	37	\$ 95	\$ 95	9,343	\$1 60	\$17,618	1
1 ..				4	4			4	4	75	75	2,000	1 25	2,500	2
1 ..				3				3		75		500	1 25	625	3
1 ..				20	15	5	5	25	20	83	83	8,000	1 60	12,800	4
1 ..				12	4	4	2	16	6	83	83	1,812	1 45	2,631	5
1 ..				3				3		85	85	900	1 25	1,125	6
1 ..				2				2		75	75	220	87	192	7
1 ..				20	20	271	60	60	331	83	83	102,468	1 32	135,995	8
1 ..				1	1	18	10	3	2	83	83	1,800	1 38	2,484	9
1 ..						85		4	39	83		5,150	1 30	6,695	10
1 ..						6			6	87	87	1,280	1 00	1,280	11
1 ..						4			4	75	75	48	1 00	48	12
1 ..						2			2	75	75	500	1 00	500	13
1 ..				1	1	15	12	3	3	84	84	5,215	1 50	7,822	14
1 ..						3			3	85	85	200	1 00	200	15
1 ..						1			1			20	75	15	16
3 14 ..				24	23	439	316	89	79	528	395	139,456	\$1 39	\$192,530	

COUNTY.

1 ..				6	1			6	1	\$ 91	\$ 91	1,750	\$1 37	\$2,406	1
1 ..				16	10	3	2	19	12	91	91	5,250	1 25	6,562	2
1 ..				12	9	2	2	14	11	91	91	2,938	1 25	3,672	3
1 ..															
1 ..				2	2	34	34	5	5	91	91	15,000	1 20	18,000	4
1 ..															
1 ..	7	\$14 00		2		2		4		1 00	1 00	300	1 25	375	5
7 ..	7	\$14 00		2	2	70	54	12	9	82	65	25,238	\$1 22	\$31,015	

STATISTICS OF

RANDOLPH

Office number.....	Name of company or mine owner.	Name of operator.	No. days worked.....	Kind of opening			Depth of shaft.....	Thickness of coal.....	Kind of power.			How ventilated.	
				Shaft.....	Slope.....	Strip-pit.....			Steam.....	Hand.....	Electricity.....	Natural.....	Furnace.....
1	Beckington, Jane Mrs.	Boone & Graves.....	260	1	1	1	4	0	1	1	1	1	1
2	Brown & Wellsley.	Brown & Wellesly.....	205	1	1	75	3	8	1	1	1	1	1
3	Cooper & Stockhouse	A. B. Cooper & Co.....	240	1	1	125	3	6	1	1	1	1	1
4	Edwards, Emanuel.	Emanuel Edwards.....	75	1	1	1	4	0	1	1	1	1	1
5	Elliott Coal Co.....	Elliott Coal Co. (Elliott)	280	1	1	145	4	0	1	1	1	1	12
6	Enterprise Coal Co.	Jno. Cronan (Santiago)	214	1	1	1	4	0	1	1	1	1	1
7	Higbee Coal Co.....	Higbee C. Co. Mine No. 1	250	1	1	1	3	10	1	1	1	1	10
8	Interstate Mining Co.	Walton Coal Co.....	220	1	1	1	123	3	8	1	1	1	14
9	Lewis & Sons, J. J.	J. J. Lewis.....	252	1	1	1	110	3	10	1	1	1	12
10	McKiernan, W. H.	W. H. McKiernan.....	185	1	1	1	3	10	1	1	1	1	1
11	Mitchell, W. E.	W. E. Mitchell.....	230	1	1	1	50	4	0	1	1	1	1
12	Morris Coal Co.....	Morris C. Co. Mine No. 10	173	1	1	1	84	4	0	1	1	1	20
13	Murlin Coal Co.....	Murlin Coal Co.....	280	2	1	1	100	4	0	3	1	1	10
14	Robinson, J. F.	J. F. Robinson.....	230	1	1	1	88	4	0	1	1	1	1
15	Ward, Harry.	Harry Ward.....	150	1	1	1	3	10	1	1	1	1	1
			3,615	11	3	6		10	8	2	5	8	7

RAY

1	Blair Andrew.....	Andrew Blair.....	150	1	1	1	50	2	1	1	1	1	1
2	Bryant & Kine.....	S. G. S. Bean.....	105	1	1	1	6	1	1	1	1	1	1
3	Campbell, Margaret.	W. Sickers.....	109	1	1	1	96	4	1	1	1	1	1
4	Chenault, A. and R.	A. R. Chenault.....	106	1	1	1	80	2	1	1	1	1	1
5	Crespin, E. E. Mrs.	Crespin & Ward.....	218	1	1	1	40	2	1	1	1	1	1
6	Fowler Coal & Mining Co.	Fowler C. & M. Co.....	100	1	1	1	110	2	4	1	1	1	1
7	Hubbell Coal Co.	Hubbell C. Co., Mine No. 10.	180	1	1	1	85	1	11	1	1	1	1
8	Hulett.....	Schooler & Thompson.....	120	1	1	1	1	7	1	1	1	1	1
9	Huston, Jas.....	Jos. Huston.....	104	1	1	1	2	1	1	1	1	1	1
10	Kallenberger, J. J.	J. J. Kallenberger.....	130	1	1	1	72	1	7	1	1	1	12
11	Kansas & Texas Coal Co.	Murlin C. Co., Mine No. 30	224	1	1	1	3	1	6	1	1	1	1
12	Loeven, Jos.....	Jos. Loeven.....	160	1	1	1	100	2	4	1	1	1	10
13	Marshall & Johnston heirs	Jas. M. Edgar.....	150	1	1	1	1	1	1	1	1	1	1
14	Mine No. 7.....	Mine No. 7.....	248	1	1	1	193	2	4	1	1	1	10
15	Merc' tile C. Co., Mine No. 17	Mercantile C. Co., Mine No. 17.	163	1	1	1	60	2	1	1	1	1	8
16	Murry, Jessie.....	J. Kraft & Sons.....	70	1	1	1	90	2	1	1	1	1	1
17	Pence Bros. & Calnen	Pence Bros. & Calnen.....	200	1	1	1	4	1	6	1	1	1	1
18	Pence, Hughes & Gibson.	Pence & Co.....	150	1	1	1	107	2	1	1	1	1	1
19	Peckering, Jos.....	Peckering Coal Co.....	225	1	1	1	2	2	1	1	1	1	10
20	Rankin, W. D.	A. F. Rankin.....	165	1	1	1	50	1	1	1	1	1	12
21	Richmond & Camden C. Co.	Mines 4, 5, 9, 12 and 14, Camden 1 and 2	160	7	1	1	120	2	6	1	1	1	3
22	Sevier, Chas.....	Richmond & Camden C. Co.	210	1	1	1	2	2	1	1	1	1	10
23	Starr, Alex.....	Ottman & Swope.....	105	1	1	1	2	2	1	1	1	1	1
24	The Grimes Mine.....	Frank Hemmer.....	100	1	1	1	180	2	6	1	1	1	4
25	Washington, A. L.	Hugh Blair.....	176	1	1	1	100	2	4	1	1	1	1
26	Wilson, Mary Mrs.	S. H. Washington.....	190	1	1	1	110	2	4	1	1	1	1
			4,018	23	1	8		13	10	9	5	18	9

COAL MINES--Continued.

COUNTY.

Pillar and room. Long wall.	Amount of powder used and cost of same.		Mules worked.	Employees.						Price paid for mining.		Tons of coal mined.	Price received at mines per ton.	Amount received for product.	Office number.
	No. of kegs.	Cost.		Miners.		Others.		Total.							
				Winter.	Summer.	Winter.	Summer.				Winter.					Summer.
1	12	\$24 00	...	5	3	1	1	6	4	\$ 70	\$ 70	3,211	\$1 00	\$3,211	1
1	60	120 00	...	3	3	...	...	85	85	85	85	1,300	1 25	1,625	2
1	430	840 00	3	20	20	3	3	23	23	60	60	10,800	1 10	11,880	3
1	3	5 25	...	1	...	...	...	1	...	1 00	1 00	68	1 50	102	4
1	...	...	8	80	70	29	20	109	90	85	85	48,943	1 30	61,349	5
1	1,405	2,810 00	4	70	60	20	20	90	80	60	60	32,195	1 02	32,709	6
1	175	350 00	1	6	6	2	2	8	8	80	80	2,885	1 12	3,245	7
1	150	300 00	...	122	95	36	28	158	123	85	85	53,553	1 25	66,941	8
1	800	1,600 00	...	36	36	12	12	48	48	60	60	28,179	1 25	31,723	9
1	...	...	...	112	86	30	24	142	110	80	80	49,034	1 25	61,292	10
1	80	160 00	1	13	...	...	...	13	...	1 10	1 10	2,571	1 27	3,282	11
2	120	240 00	...	7	4	1	1	8	5	65	65	2,326	1 10	2,558	12
1	120	240 00	1	10	4	3	1	13	5	60	60	3,926	1 25	4,907	13
1	3,600	7,200 00	10	150	130	35	30	185	160	60	60	94,513	1 02	96,410	14
3	3,200	6,400 00	7	125	125	30	30	155	155	60	60	96,000	1 00	96,000	15
1	40	70 00	1	2	2	1	1	3	3	60	60	1,440	1 25	1,800	16
1	18	36 00	1	5	3	1	1	6	4	75	75	1,711	1 00	1,711	17
416	10,203	20,395 25	37	767	646	204	174	971	820	.....	.....	432,655	\$1 11	\$480,745	

COUNTY.

1					2		1		3	\$1 00	\$1 00	560	\$1 75	\$980	1
1					3				3	1 00	1 00	500	2 00	1,000	2
1					3	1			3	1 12	1 12	679	2 00	1,358	3
1					4	2	1		5	95	95	800	1 75	1,400	4
1					10	4	3	1	13	95	95	2,600	1 65	4,290	5
1					30	15	3	2	33	1 00	1 00	4,400	1 50	6,600	6
1				2	50	40	7	6	57	95	95	17,844	1 60	28,551	7
1					7		2		9	1 00	1 00	12,000	2 00	24,000	8
1					5				5	1 27	1 27	643	2 00	1,286	9
1					2	2			2	1 35	1 50	400	2 00	800	10
1				5	5	100	100	25	25	1 00	1 12	42,318	1 30	55,013	11
1					5	3			5	1 50	1 50	1,290	2 00	2,580	12
1					5	2			5	1 37	1 37	800	1 73	1,387	13
1															
1				3	3	100	100	15	15	1 00	1 00	36,258	1 44	50,595	14
1					4			1	5	1 00	1 00	425	1 75	793	15
1				5	2	100	40	25	10	1 00	1 00	30,050	1 55	46,577	16
1				2		50		8	1	1 00	1 00	5,420	1 50	8,130	17
1					45	15	12	6	57	1 00	1 00	14,603	1 69	24,801	18
1				2	2	20	20	5	5	1 00	1 00	6,000	1 60	9,600	19
7				14	10	280	190	52	36	1 00	95	75,000	1 50	116,342	20
1					5	2	1		7	1 00	90	1,684	1 60	2,694	21
1					2	2			2	1 25	1 25	200	2 00	400	22
1					6		1		6	1 00	1 00	840	1 75	1,470	23
1					8	6	3	2	11	1 00	1 09	1,424	1 75	2,492	24
1				3	2	50	30	7	7	1 00	95	8,162	1 54	12,569	25
31				38	28	896	574	172	118	1068	692	264,900	\$1 59	\$405,708	.....

STATISTICS OF
SALINE

Office number.....	Name of company or mine owners.	Name of operator.	No. of days worked...	Kind of opening			Depth of shaft..... Feet.....	Thickness of coal..... Inches.....	Kind of power.			How ventilated.	
				Kind of opening	Kind of opening	Kind of opening			Kind of power.	Kind of power.	Kind of power.	Fan-drum...	Furnace...
				Shaft.....	Slope.....	Drift.....			Hand.....	Electricity...	Natural.....		
1	Banks, Ira O.....	Ira O. Banks.....	60	1	...	...	30	1	8	...	1	1	...
2	Terrell, Henry.....	T. S. Maupin.....	150	1	...	...	1	6	...	1	1	1	...
3	Terrell, H. C.....	Tim Maupin.....	40	1	...	...	1	6	...	1	1	1	...
			250	1	2	...	...	...	1	2	...	3	...

ST. CLAIR

1	Cook, Jas.....	Jas. Cook.....	30	...	...	1	...	1	6	...	1	...	1	...
2	Crowell, H. O.....	O. S. Butcher.....	50	1	...	...	...	1	6	...	1	...	1	...
3	Greggs, L. L.....	L. L. Griggs.....	90	1	...	...	...	1	10	...	1	...	1	...
4	Hoover Mines.....	Thos. Greathouse.....	120	1	...	...	...	3	4	...	1	...	1	...
5	" ".....	C. F. Seymour.....	144	1	...	...	60	...	8	...	1	...	1	...
6	Kneirim, John.....	Geo. H. Kneirim.....	74	1	...	...	26	...	6	...	1	...	1	...
7	Oliver, Alex.....	W. F. St. Clair.....	100	...	1	...	...	...	2	...	1	...	1	...
8	Short estate.....	J. M. Short.....	42	...	1	...	...	...	3	...	1	...	1	...
9	Sholz, J.....	W. H. Lane.....	100	...	1	...	...	...	2	...	1	...	1	...
10	Woodin, H. M.....	H. M. Woodin.....	50	...	1	...	...	3	...	1	...	1	...	...
			800	2	3	2	3	...	4	6	...	10	...	...

SCHUYLER

1	Golston, Ira.....	Ira Golston.....	100	1	...	...	65	3	...	1	...	1	...	...
2	Kloke & Rosenthal.....	Bradburn & Co.....	120	1	...	...	24	3	10	...	1	...	1	...
			220	2	...	...	...	...	2	...	1	1	...	...

VERNON

1	Arthur Coal & Mining Co.	Arthur C. & M. Co.....	120	1	...	...	4	10	...	1	...	1	...	...
2	Augur, F. B. Hill Mine..	F. B. Augur.....	50	1	...	...	2	6	...	1	...	1	...	...
3	Augur, F. B. Hubb Mine..	F. B. Augur.....	30	1	...	...	2	6	...	1	...	1	...	...
4	Baker, Frank.....	Frank Baker.....	80	...	1	...	...	5	...	1	...	1	...	...
5	Central C. & O. Co. M. No. 14	C. C. & C. Co. M. No. 14..	230	1	...	...	114	4	...	1	...	...	16	...
6	Central C. & O. Co. M. No. 19	C. C. & C. Co. M. No. 19..	259	1	...	...	95	4	...	1	...	...	12	...
7	Ewing, F. Y.....	Goodwin & Smith.....	90	...	1	...	...	1	8	...	1	...	1	...
8	Jones, F. W.....	D. K. Perkins.....	100	...	1	...	...	3	...	1	...	1	...	...
9	Lowes, J. A.....	J. A. Lowes.....	128	...	1	...	...	3	...	1	...	1	...	...
10	Mayberry, E. M.....	F. M. Mayberry.....	146	...	1	...	...	3	...	1	...	1	...	...
11	Miller, J. F.....	A. S. Brown.....	101	1	...	...	22	6	...	1	...	1	...	...
12	Radde, F. M.....	F. M. Radde.....	4	...	1	...	...	10	...	1	...	1	...	...
13	Rush Coal & Mining Co.....	Rush Coal & Mining Co.	102	1	...	...	104	3	...	1	...	...	10	...
14	Vernon Coal Co.....	J. A. Gee.....	50	1	...	...	22	3	...	1	...	...	10	...
15	Whitworth, Chas.....	Chas. Whitworth.....	105	1	...	...	25	2	...	1	...	1	...	...
			1,595	7	4	1	3	...	3	10	2	8	3	4

COAL MINES—Continued.

COUNTY.

Office number.....	Amount received for product.....	Price received at mines per ton.....	Tons of coal mined....	Price paid for mining.		Employees.			Amount of powder used and cost of same.	Pillar and room.....	Long wall.....			
				Summer...	Winter....	Total.	Others.	Miners				Mules worked.		
													Summer...	Winter....
1	\$225	\$1 12	200	.....	2	2	2	2	.....	1	.....			
2	1,105	2 50	542	\$1 50	2	2	2	2	.....	1	.....			
3	500	2 50	200	1 50	4	4	4	4	.....	1	.....			
	\$1,830	\$1 94	942	.....	9	2	9	9	.....	3	.....			

COUNTY.

1	.....	.....	.....	1	.....	1	.....	.....	20	\$3 00	\$40	1
1	.....	.....	.....	4	.....	4	.....	.....	40	1 75	70	2
1	.....	.....	.....	3	2	6	.....	.....	558	1 82	1,013	3
1	.....	.....	.....	3	.....	3	.....	.....	600	2 50	1,500	4
1	.....	.....	.....	4	2	6	.....	.....	871	1 84	1,610	5
1	35	\$70 00	.....	5	.....	5	.....	.....	746	1 50	1,119	6
1	4	6 00	.....	2	1	4	.....	.....	1,084	1 50	1,628	7
1	2	4 00	.....	2	.....	2	.....	.....	170	1 50	255	8
1	3	6 00	.....	2	.....	2	.....	.....	250	1 50	375	9
1	10	20 00	.....	2	.....	2	.....	.....	200	1 50	300	10
1 9	54	\$106 00	.....	27	10	35	.....	.....	4,539	\$1 74	\$7,906	.....

COUNTY.

1	.....	.....	.....	3	.....	3	.....	.....	87	87	600	\$1 50	\$900	1
1	2	200	2	15	15	4	4	19	19	87	3,200	1 25	4,000	2
1	3	550	2	18	15	4	4	22	19	.....	3,800	\$1 30	\$4,900	

COUNTY.

1	655	\$1,310 00	3 3	30 28	8	7	38	35	55	\$ 55	16,897	\$1 07	\$17,545	1
1	5	9 25	1 1	2	.....	.....	.....	2	75	75	844	1 50	968	2
1	12	22 20	.....	3	1	1	1	4	1 00	1 00	342	1 50	513	3
1	.....	.....	.....	2	1	1	1	3	75	75	300	1 25	375	4
1	3,968	7,932 00	11 11	70 62	41	36	111	98	55 55	55 55	87,034	1 00	87,034	5
1	259	518 00	2	20	.....	35	.....	55	55	80	3,491	1 00	3,491	6
1	10	18 50	.....	.....	1	.....	.....	.....	55	60	186	2 28	3,475	7
1	150	277 50	.....	.....	3	.....	.....	3	1 00	1 00	750	1 50	1,125	8
1	.....	.....	.....	.....	4	.....	.....	4	75	75	728	1 25	910	9
1	42	69 30	2 2	1 1	2 2	3 3	3	3	75	75	1,320	1 00	1,320	10
1	30	55 50	.....	3	1	1	1	4	75	75	459	1 37	627	11
1	.....	.....	.....	3	.....	1	.....	.....	.....	17	1 50	25	.....	12
1	3,028	6,052 00	6 6	82 82	24	24	106	106	60	60	49,824	1 05	52,315	13
1	125	250 00	2	10	.....	3	.....	13	50	50	3,000	1 00	3,000	14
1	40	74 00	.....	5	.....	.....	.....	5	55	65	500	1 25	625	15
1 14	8,320	\$16,588 25	27 23	221 187	123	72	344	259	.....	.....	164,972	\$1 03	\$170,246	.....

TABLE IX—Showing rank of coal producing counties

No. counties.	Counties.	1891.		1892.		1893.		1894.	
		Rank.	Product, tons.	Rank.	Product, tons.	Rank.	Product, tons.	Rank.	Product, tons.
1	Bates	1	726,283	2	659,924	2	627,514	4	291,271
2	Macon	2	454,029	1	685,335	1	788,563	1	511,566
3	Lafayette	3	352,803	3	347,600	3	371,928	2	296,931
4	Ray	4	282,247	5	272,948	4	319,405	6	196,852
5	Randolph.....	5	224,758	4	297,011	6	219,762	5	209,656
6	Henry	6	144,139	6	137,258	8	125,962	8	84,473
7	Putnam.....	7	123,526	7	134,984	7	145,641	7	119,832
8	Vernon	8	64,303	8	119,036	5	234,376	3	297,599
9	Barton.....	9	63,026	9	108,784	9	61,301	10	55,767
10	Grundy.....	10	28,983	13	28,670	12	35,770	12	35,000
11	Linn.....	11	28,036	11	35,588	10	48,302	9	71,807
12	Boone.....	12	23,577	14	21,058	14	25,602	17	19,038
13	Caldwell.....	13	22,661	10	38,333	13	29,020	14	22,869
14	Audrain.....	14	19,569	12	29,792	11	42,262	11	43,910
15	Adair.....	15	17,110	17	14,820	16	20,957	15	20,744
16	Oallaway.....	16	15,581	15	16,551	15	23,961	13	23,223
17	Montgomery.....	17	13,124	16	16,039	17	15,923	19	12,175
18	Johnson.....	18	10,530	18	10,485	18	12,101	18	15,427
19	Olay.....	19	8,289	.....	.....	19	7,139	16	19,371
20	Saline.....	20	7,981	22	4,440	26	1,865	29	1,875
21	St. Clair.....	21	3,866	21	5,405	21	6,517	22	5,337
22	Dade.....	22	3,402	20	6,881	20	6,695	27	2,327
23	Nodaway.....	23	2,222	26	1,850	24	2,548	25	2,984
24	Cooper.....	24	2,200	24	3,666	23	2,892	26	2,639
25	Cole.....	25	2,000	27	1,548	27	1,200	28	2,000
26	Cedar.....	26	1,264	23	4,181	33	890	33	730
27	Chariton.....	27	1,170	25	2,312	28	1,136	34	185
28	Jasper.....	28	633	.....	.....	.....	.....	.....	.....
29	Ralls.....	29	614	32	280	25	2,160	23	4,400
30	Sullivan.....	30	560	19	8,800	31	1,000	21	6,600
31	Pettis.....	.....	.....	31	433	34	181	30	1,738
32	Moniteau.....	31	476	.....	.....	.....	.....	.....	.....
33	Schuyler.....	32	280	30	766	32	692	24	3,556
34	Livingston.....	33	200	29	1,000	30	1,000	32	800
35	Miller.....	34	130	33	127	.....	.....	.....	.....
36	Morgan.....	35	36	.....	.....	.....	.....	.....	.....

in order of production for each of past eleven years.

1895.		1896.		1897.		1898.		1899.		1900.		1901.	
Rank..	Product, tons.	Rank..	Product, tons.	Rank..	Product, tons.	Rank..	Product, tons.	Rank..	Product, tons.	Rank..	Product, tons.	Rank..	Product, tons.
3	252,231	2	375,300	2	410,304	3	343,878	2	441,963	3	363,577	4	347,047
1	539,120	1	519,649	1	490,601	1	720,999	1	739,293	1	595,297	1	1,025,213
2	256,761	3	307,286	3	284,448	2	347,857	3	392,608	2	377,892	2	439,217
6	150,998	6	149,083	6	157,652	6	215,348	6	252,683	5	243,592	6	264,900
5	218,774	5	230,194	5	243,012	4	314,842	4	354,830	4	303,133	3	432,655
9	99,058	9	78,551	8	76,023	10	68,261	5	81,373	9	129,902	10	103,267
7	111,572	8	85,032	7	101,330	7	121,952	7	126,673	10	106,203	9	139,456
4	237,965	4	303,886	4	281,894	5	252,134	5	298,382	6	229,343	8	164,972
10	76,242	12	37,570	9	70,554	8	104,233	11	67,844	8	141,520	7	183,988
12	37,200	10	41,000	11	35,402	12	39,974	13	39,633	13	42,371	13	42,361
8	100,179	7	92,022	10	67,895	9	83,041	10	72,081	11	81,130	11	85,459
14	21,090	15	20,428	18	14,127	16	16,780	14	29,665	17	19,179	16	21,549
16	17,876	16	19,780	16	20,000	14	23,000	15	28,000	14	26,000	18	19,021
11	40,918	11	37,611	12	35,167	13	36,498	12	40,759	12	43,530	12	44,066
13	24,540	13	23,510	13	27,078	11	62,215	8	104,868	7	181,577	5	347,047
15	18,771	14	22,182	15	20,152	15	21,281	17	22,356	18	15,120	15	21,562
18	10,900	18	10,736	17	15,200	26	2,740	27	2,670	29	1,675	28	1,680
19	8,873	24	3,961	23	3,770	21	4,318	23	4,710	20	8,455	20	9,695
23	4,000	20	6,500	19	9,000	30	1,500	20	9,000	19	12,800	19	16,681
24	3,682	32	432	32	1,281	35	740	32	1,320	34	500	35	942
21	5,487	23	4,058	21	5,452	23	3,596	25	4,210	22	3,892	22	4,539
22	5,066	22	4,570	23	2,980	20	4,495	22	4,930	28	2,350	21	5,393
29	1,802	21	6,065	24	2,769	33	1,000	29	2,350	27	2,371	26	2,000
27	2,492	31	750	34	250	36	514	36	320	32	1,000	33	1,265
22	1,120	.....	.....	22	3,794	22	3,704	19	8,600	.....	.....	25	2,280
31	1,590	28	1,863	27	2,178	32	1,244	30	2,116	31	1,095	27	1,730
28	1,858	33	355	29	1,573	24	3,488	24	4,517	25	2,940	30	1,447
.....													
20	8,489	19	9,644	20	7,843	18	7,768	18	16,014	15	20,956	14	25,238
34	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	30	1,470	19	5,400	26	3,200	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	480
30	1,620	26	2,440	28	2,022	25	2,921	21	5,304	21	4,253	23	13,800
33	1,050	29	1,155	31	1,468	27	1,817	34	800	23	3,813	34	11,177
.....													
.....	.....	.....	.....	.....	.....	31	1,440	.....	.....	35	300	29	1,674

TABLE X—SHOWING RANK OF COAL PRODUCING COUNTIES

No. counties	Counties.	1891.		1892.		1893.		1894.	
		Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.
37	Monroe	36	12	...	...	...	...	...	...
38	Lincoln	...	...	...	...	...	...	...	...
39	Carroll	..	...	28	1,380	29	1,088	31	920
40	Jackson	...	...	...	...	22	4,819	20	6,720
41	Howard ...	...	...	...	...	...	...	...	...
42	Cass	...	...	...	...	...	...	...	...
	Totals	...	2,850,018	...	3,017,285	...	3,190,442	...	2,383,322

IN ORDER OF PRODUCTION FOR EACH OF PAST NINE YEARS—Continued.

1885.		1886.		1887.		1888.		1889.		1890.		1901.	
Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.	Rank...	Product, tons.
...	.....	...	.....	...	.....	28	1,810	33	960	33	822	31	1,445
...	.....	...	.....	...	.....	...	.....	...	.....	36	270	...	.....
26	2,664	27	2,304	26	2,225	34	803	28	2,397	30	1,575	32	1,430
17	14,632	17	18,000	14	21,028	17	15,000	16	25,125	16	20,900	17	20,000
25	3,460	25	3,220	25	2,240	....	.....	35	456	24	2,944	24	3,685
....	.....	30	1,000	33	1,206	29	1,558	31	1,321	26	2,745	....	.....
...	2,283,081	....	2,420,147	....	2,429,388	....	2,838,152	....	3,191,811	....	2,995,022	....	3,810,767

LIST OF COAL COMPANIES AND OPERATORS OF SAME.

ADAIR COUNTY.

Company.	Operator.	Postoffice address.
American Fuel Co., Mine No. 1....	American Fuel Co.	Stahl.....
Besanko, Robt.....	Robt. Besanko.....	Fegley.....
Culler Bros. (Culler Mine).....	Thos. Scott.....	Fegley.....
C. B. Havens (Danforth).....	C. B. Havens & Co.....	Omaha, Neb.
Kansas City Midland O. and M. Co.	Kansas City Midland O. & M. Co.	Kansas City.....
McCabe, Patrick.....	Patrick McCabe.....	Fegley.....
Manufacturers' C. & C. Co., Mine Nos. 1 and 2.....	Manufacturers' C. & C. Co.....	Kansas City.....
Motter, Noah (Miller Mine).....	F. J. Miller.....	Fegley.....
Oak Block Coal Co. (Corporation)...	Oak Block Coal Co. (Corporation)...	Kirksville.....
Paris, John.....	John Paris.....	Novinger.....
Rombauer Coal Co.....	Rombauer C. Co., Mine Nos. 1 & 2.	".....
Scott & Son (Hazel Creek).....	D. C. Scott.....	Fegley.....

AUDRAIN COUNTY.

Bevan, Wm. (Curver Creek Mine) ..	Wm. Bevan.....	Laddonia.....
Carr, Paris.....	Paris Carr.....	Benton City.....
Farber Mine.....	Lawder & Peterson.....	Farber.....
Hafner, O. F. (Worcester Mine).....	Jos. Holtkamp.....	Worcester.....
Johnston, R. E. (McGuire Mine).....	G. W. McGuire.....	Martinsburg.....
Krieger Coal Co.....	Oscar Krieger.....	".....
Standard Coal Co.....	Joe Sanford.....	Vandalia.....
Mississippi Glass Co.....	Mississippi Glass Co.....	".....
Vandalia Coal Co.....	Vandalia Coal Co.....	".....

BARTON COUNTY.

Bell, J. W.....	J. W. Bell.....	Lamar.....
Chancellor, H. C., Sr.....	Joxie Brown.....	Minden Mines.....
Divine, W. B.....	W. B. Divine.....	Newport.....
Oak Coal Co.....	F. R. Gray.....	Midway, Kas.....
Hanshaw, W. H.....	W. H. Hanshaw.....	Liberal.....
Lasby, M.....	G. W. Claunch.....	Mulberry, Kansas, Route No. 2.....
Miller, W. L.....	Sanford Bro. Mercantile Co.....	Minden Mines.....
Prosser, J. J.....	Prosser, Sanders & Sanders.....	Liberal.....
Richards, Louisa Mrs.....	C. A. Richards.....	".....
Spear, M. M.....	M. M. Spear.....	Lamar.....
Stockton, E.....	E. Stockton.....	Liberal.....
Travis Mine.....	Joe Travis.....	".....
VanFelt, C.....	C. F. Swigert.....	Minden Mines.....
Walser, G. H.....	Rogers & Nicholson.....	Liberal.....
Wear Coal Co., Mine No. 3.....	Geo. Mellor.....	".....
Wear Coal Co., Mine No. 10.....	Wear Coal Co.....	Pittsburg, Kas.....
Western Coal Co., Mine No. 8.....	Western Coal Co.....	Pittsburg, Kas., and St. Louis.....
" " " No. 9.....	" " (Hall & Fletcher)...	Minden Mines.....

BATES COUNTY.

Company.	Operator.	Postoffice address.
Ackerman, Jas.	Jas. Ackerman	Hume
Brooks, J. J.	J. J. Brooks	Rich Hill
Craig, T. A.	T. A. Craig	Worland
Darby, J. W.	W. H. Mace	Foster
Engels, L. G.	J. T. Engels	Rich Hill
Kansas-Missouri Land and Coal Co.	W. W. Peeler	Rockville
Lewis, O. H.	Harris Gerrodo	Worland
Martin, F. M.	F. M. Martin	Rich Hill
Metzler Coal Co.	Metzler Coal Co.	Foster
Missouri Pacific Railroad Co.	J. Newcomb	
Parker, L. W.	E. C. Hines	Rich Hill
Pearson, Peter	Peter Pearson	
Prose Mine	Briscoe & Prose Co	Foster
Rankin Mine	B. Cooper	Amsterdam
Rich Hill Coal Co.	Rich Hill Coal Co., Mine 15	St. Louis
" "	" 22	"
" "	Berteau Bros.	Rich Hill
" "	J. C. Griggs	"
" "	W. H. Lowder	"
" "	D. McComb	"
" "	R. Pearson	"
" "	S. Reese	"
" "	Vernon Coal Co.	"
Scott, Sarah	Hensley & Mullis	Foster
Selders Bros.	Selders Bros.	"
Steele, D. W.	D. W. Steele	"
Tatley, J. V. Coal Co.	J. V. Tatley	Worland
Thomas, Mark	Mark Thomas	Foster
Walnut Land & Coal Co.	C. T. Bishop	"
" "	S. L. Queen	"
Western Coal & Mining Co.	J. C. Rankin	Worland

ROONE COUNTY.

Beasley, W. H.	John Gossett	Harrisburg
Buckler, H. J.	H. T. Buckler	Rucker
Columbia Coal Co.	R. E. Henry	Columbia
Davis, I. R.	Isaac R. Davis	Brown Station
Gilvin Mine	J. E. Gilvin	Harrisburg
Keene, J. H.	Jas. H. Keene	Columbia
McKenzie, J. F.	J. F. McKenzie	Harrisburg
Prather, S. S.	T. R. Prather	Columbia
Robinson, J. W.	T. B. Hord	Harrisburg
Sublett, S. T.	S. T. Sublett	Columbia
White Bros.	J. H. & Wm. White	Rucker

CALDWELL COUNTY.

Caldwell Coal Co.	Caldwell Coal Co.	Hamilton
Dripping Springs Coal Co.	Dripping Springs Coal Co.	Kingston

CALLAWAY COUNTY.

Castle, Wm.	Wm. Castle	Fulton
Curd, Edwin	Edwin Curd	"
"	John Marsinkoff	"
Fulton Fire Brick Co.	F. F. B. & M. Co.	"
Harris, John	John Harris	"
Homer, Jos.	R. F. Thorp	"
Reed, J. F.	J. F. Reed	"
Smith Jas.	Jas. Smith	"
"	Wm. Simmons	"
Sims Bro's. Coal Co.	Sims Bro's. Coal Co.	"

CARROLL COUNTY.

Company.	Operator.	Postoffice address.
Farr, Robt.....	Robt. Farr.....	Little Compton.....
Gallaher, W. P.	W. R. Gallaher & B. White.....	" "
Hughes, Wm.....	Wm. Hughes.....	" "
Ogie, W. F.....	W. F. Ogie.....	" "

CEDAR COUNTY.

Beebe, E. M.....	E. M. Beebe.....	Lebeck.....
Duncan, J. C.....	H. Parvin.....	Jerico.....
Dial, J. Mrs.....	John Conner.....	Filley.....
Poague, G. M.....	G. M. Poague.....	Jerico.....
Schroder, O. M.....	C. M. Schroder.....	Eldorado Springs....
Smith, Wm.....	Wm. Smith.....	Jerico.....
Young, J. H.....	G. A. Smith	Filley.....

CHARITON COUNTY.

Huenten, John.....	Robt. Brewer.....	Guthridge Mills.....
Isle, R. W.....	R. W. Isle.....	Indian Grove.....
Kahler, W. J.....	W. J. Kahler.....	Newcomer.....
Wachter, H.....	H. Wachter.....	Salisbury.....

CLAY COUNTY.

Missouri City Coal Co.....	Missouri City Coal Co.....	Missouri City.....
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COLE COUNTY.

Edwards & Kauffman.....	Edwards & Kauffman.....	Elston
Urban, Wm.....	Wm. Urban.....	"

COOPER COUNTY.

Hazel Springs Coal Mines.....	O. W. Hazell.....	Boonville.....
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DADE COUNTY.

Hickman, O.....	A. Leonard.....	Sylvania.....
McCluey, Robt.....	Robt. McCluey.....	"
"	J. A. Clayton.....	"
McElhinney, B. D.....	Finney & Summonds.....	"
McCombs Mine.....	Thos. Gardner.....	"

GRUNDY COUNTY.

Grundy County Coal Co.....	Grundy County Coal Co.....	Trenton
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HENRY COUNTY.

Company.	Operator.	Postoffice address.
Beedy, M.....	W. E. Hughes.....	Windsor.....
Bigum Mine.....	Resse & Bigum.....	Deepwater.....
Blair, John O.....	Cooper Creek Coal Co.....	Brownington.....
Bowen Bro.....	Bowen Bro.....	Lewis Station.....
Burgess, L. L.....	L. L. Burgess.....	Piper.....
Chappell, J. R.....	C. W. Field.....	Windsor.....
Clark, David.....	David Clark.....	Montrose.....
Co-operative Coal and Mine Co.....	Co-operative Coal Co.....	Lewis Station.....
Daley, G. G.....	E. A. Barnhart.....	Clinton.....
Demaree, H. T.....	H. T. Demaree.....	Deepwater.....
Dickey, W. S., Clay Mfg. Co.....	W. S. Dickey, Clay Mfg. Co.....	Montrose.....
Engeman, Chas.....	Chas. Engeman.....	Clinton Route 7.....
Geahart, Theo.....	Theo. Geahart.....	Windsor.....
Hines, F. B.....	C. W. Field.....	Brownington.....
Hobbs, H. B.....	Denzler & Church Coal Co.....	Deepwater.....
Hurst, Jos.....	J. Hurst.....	Clinton.....
Jordan Coal Co.....	Jordan Coal Co.....	Windsor.....
Miller, W. F.....	L. M. Beaman.....	Garland.....
Owen, J.....	C. Gupbert & Grover.....	Clinton.....
Owen, W. E.....	E. A. Barnehart.....	Lewis Station.....
Rigg, D. B.....	Chapman & Dalton.....	Deepwater.....
Rusk, Wm.....	C. Roady.....	Wm Reese.....
Salmon & Salmon.....	Wm Reese.....	Montrose.....
Smith, J. W.....	J. W. Smith.....	Brownington.....
Peeman, Jno.....	Jno. Peeman.....	Montrose.....
Thompson, Jno.....	Jno. Thompson.....	
Tyree, Jos.....	Jos. Tyree.....	
Wilson, Thos. P.....	Hurt & O'Neal.....	

HOWARD COUNTY.

W. R. Graham.....	W. R. Graham.....	Fayette.....
Lockridge, B. M.....	Jno. Hinch.....	".....
Morrison, A. W.....	R. S. Jackson.....	

JACKSON COUNTY.

Brush Creek Mine.....	Brush Creek Coal Mining Co.....	Kansas City.....
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JOHNSON COUNTY.

Adams, G. W.....	J. W. Steels.....	Warrensburg.....
Bancroft, G. M.....	DeWitt O. Woolery.....	Montserratt.....
Boyd & Son, Thos.....	Thos. Boyd & Son.....	Knobnoster.....
Christopher, J. H.....	F. Millard.....	Warrensburg.....
Hardin, John.....	L. M. Herrington.....	Bristle Ridge.....
Hanna & Co., L. E.....	L. E. Hanna & Co.....	Montserratt.....
Macknod, Isaac.....	D. A. Bullick.....	Warrensburg.....
Melley, M. B.....	M. B. Melley.....	".....
Park, W. L.....	E. T. Strickland.....	Dunksburg.....

LAFAYETTE COUNTY.

Company.	Operator.	Postoffice address.
Anderson, August	August Anderson	Lexington
Bell, W. H.	W. H. Bell	Corder
Bell & Greer	Bell & Greer	Lexington
Bonanza Coal Co.	S. W. Brandon	Higginsville
Buckhorn Coal Co.	S. Mc. R. Calloway	Waverly
Carter Coal Co.	Carter Coal Co.	Wellington
Chancellor, C. A.	C. A. Chancellor	Lexington
Consolidated Farmers' Coal Co.	Consolidated Farmers' Coal Co.	Higginsville
Corder Coal Co.	H. G. Asbury	Corder
Diamond Coal Co.	O. S. Wilson, Mgr.	Corder
Dover Coal Co.	Dover Coal Co.	Lexington
Edmunds, J. A.	J. A. Edmunds	
Farmers' Coal Co.	G. B. Beatty, Mine No. 2 & 3.	Kansas City
Felth, Wm.	Kratz & Grim	Higginsville
Frerking, H. F.	H. F. Frerking	Concordia
Gann, R. B.	R. Y. Rowland	Odessa
Gaffin, O. M.	O. M. Gaffin	Lexington
Gelsendorfer, S. F.	S. F. Gelsendorfer	Corder
Hendricks, S. B. Miss	M. Bartels	Concordia
Hendricks, S. Mrs	H. Bartels	
Hoffman, E. J.	E. J. Hoffman	Higginsville
Hohenwald Bros	O. R. Hohenwald	Corder
Hudson, Jas.	Jas. Hudson	Higginsville
Independence Coal Mining Co.	L. B. Zeitz	Independence
Jones, Emma Mrs	W. Alcorn	Higginsville
Kreese, A. F.	A. F. Kreese	Concordia
Labor Exchange Coal M. Ass'n	Labor Exchange Coal M. Ass'n	Wellington
Lexington Coal Co.	L. C. M. Co., Glen Oak shaft	St. Louis
" " "	" " Graddy	" "
" " "	" " McDowell	" "
" " "	" " Midway	" "
" " "	" " No. 1 Riverton shaft	" "
" " "	" " Seawell shaft	" "
" " "	" " Valley shaft	" "
Longest, J. R.	J. S. Stephenson	Higginsville
Looney Mine	Ballew & Glandish	
McGrew, J. C.	J. C. McGrew	Lexington
Macey Estate, Henry	Henry Macey Estate	Kansas City
Mayview Coal Co.	B. F. Cary	
Morgan, W. T.	W. P. Morgan	Corder
Morrison & Wentworth Bank	Star Coal Co.	Lexington
Perry, Thos.	Thos. Perry	Bates City
Rosewell Bros., Jas.	Jas. Rosewell & Bro.	Lexington
Salt Fork Coal Co.	Salt Fork Coal & Mining Co.	Corder
Silver Creek Coal Co.	Jones & Mitchell	Waverly
Strothers, F. T.	F. T. Strothers	Bates City
Summers, M. W.	M. W. Summers	Alma
Walton Mines	J. T. Walton	Lexington
Walton, J. F.	Seth Spruce	
Wellington Coal Co.	Labor Exchange, Branch No. 330	Wellington
Williamson, O. T.	Shackelford & Borland	Bates City
Woskoski, M.	Mike Woskoski	Higginsville
Serat, M. E.	M. E. Serat	Kansas City

LINN COUNTY.

Black Plume Mine	W. N. Nickell	Brookfield
Brookfield Coal Co.	Brookfield Coal Co.	"
Burdell Mine	Burdett & Johnson	"
Landreth Mine	Landreth & Sons	Marcelline
Marcelline Coal Co.	Marcelline Coal Co.	"
Schaefer, Bernard	Bernard Schaefer	Brookfield
Williamson, L. R.	L. A. Williamson	"

LIVINGSTON COUNTY.

Adams, J. A.	J. A. Adams	Chillicothe
Cox's Star Mine	W. L. Cox & Bro.	"
Gorlich, O.	J. W. Tindell	Mooreville

MACON COUNTY.

Company.	Operator.	Postoffice address.
Bevier Black Diamond.....	Bevier Black Diamond.....	Bevier.....
Helmet Mining Co.....	Helmet Mining Co.....	Kansas City.....
James, Levi, Mrs.....	James Bros.....	Bevier.....
Kansas & Texas Coal Co.....	Kas. & Texas C. Co., Mine No. 52.	St. Louis.....
" " " ".....	" " " " No. 57.	" ".....
" " " ".....	" " " " No. 61.	" ".....
" " " ".....	" " " " No. 66.	" ".....
" " " ".....	" " " " No. 68.	" ".....
" " " ".....	" " " " No. 69.	" ".....
" " " ".....	" " " " No. 70.	" ".....
Murlin Coal Co.....	Murlin Coal Co.....	Bevier.....
Northwestern Coal & Mining Co....	Northwestern Coal & Mining Co....	" ".....
Richmond, J. G.....	J. G. Richmond.....	College Mound.....
Thomas Rowland.....	Rowland Thomas.....	Bevier.....
Watson Coal Co.....	W. S. Watson.....	" ".....

MONITEAU COUNTY.

Bowlen, Rohrback Mining Co.....	Bowlen, Rohrback Mining Co.....	California.....
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MONROE COUNTY.

Grier, W. T.....	Grier & Pool.....	Paris.....
Montgomery, W. J.....	W. J. Montgomery.....	" ".....

MORGAN COUNTY.

Hubbard & Moore.....	Hubbard & Moore.....	Versailles.....
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MONTGOMERY COUNTY.

Hayes, F.....	Hayes Bro. & Johnson.....	Wellsville.....
Whitehead, Henry.....	Henry Whitehead.....	" ".....

NODAWAY COUNTY.

Carpenter, Wroc.....	J. C. Pearson.....	Quitman.....
Potts, Wm.....	W. Potts.....	Burlington.....
Slaughter, J. Mary.....	J. S. Davis.....	Quitman.....

PUTNAM COUNTY.

Blackbird Coal Co.....	Blackbird Coal Co.....	St. Joseph.....
Blankenship, Thos.....	Smith & Whitaker.....	Pineville.....
Dixon, Hugh.....	Hugh Dixon.....	Cincinnati, Ia.....
Dodge, C. E.....	O. E. Dodge.....	Unionville.....
Fielding & Son, Thos.....	Star Coal Co.....	Pearl City.....
Guffey, Alex.....	Alex Guffey.....	Unionville.....
Lynch, Thos.....	Thos. Lynch.....	Rosewood.....
Mendota Coal Co.....	Mendota Coal Co., Mine Nos. 2 and 8	Mendota.....
" " " ".....	Arnold Bro's Mine No. 9.	" ".....
" " " ".....	H. Medlin " " 7.	" ".....
Minear, David.....	David Minear.....	Rosewood.....
Percy, G. B.....	Smith and Lynch.....	" ".....
Robison, Jake.....	Jake Robison.....	" ".....
Rogers, J. W.....	Rogers Bro's.....	Pearl City.....
Shean, Dan.....	Dan Shean.....	Unionville.....
Trent, Wilson.....	Wilson Trent.....	Rosewood.....

RALLS COUNTY.

Company.	Operator.	Postoffice address.
Barger, J. A.....	J. A. Barger.....	Perry.....
Fitzpatrick Bro's.....	Fitzpatrick Bro's.....	".....
Perry Coal Co.....	Perry Coal Co.....	".....
Ralls County Coal Co.....	Ralls County Coal Co., Mine Nos. 1 and 2.....	".....
Salling Coal Co.....	Salling Coal Co.....	".....

RANDOLPH COUNTY.

Rickington, Jane Mrs.....	Boone & Graves.....	Moberly.....
Brown & Wellesley.....	Brown & Wellesley.....	Renick.....
Cooper & Stockhouse.....	A. B. Cooper & Co.....	Moberly.....
Edwards, Emanuel.....	Emanuel Edwards.....	Huntsville.....
Elliott Coal Co.....	Elliott Coal Co. (Elliott).....	Elliott.....
	(Santiago).....	
Enterprise Coal Co.....	Jno. Cronan.....	Moberly.....
Higbee Coal Co.....	Higbee Coal Co., Mine No. 1.....	Higbee.....
	No. 2.....	
Interstate Mining Co.....	Walton.....	
Lewis & Sons, J. J.....	J. J. Lewis.....	Huntsville.....
McKiernan, W. H.....	W. H. McKiernan.....	Moberly.....
Mitchell, W. E.....	W. E. Mitchell.....	Huntsville.....
Morris Coal Co.....	Morris Coal Co., Mine No. 10.....	
Murlin.....	Murlin Coal Co.....	Bevier.....
Robinson, J. F.....	J. F. Robinson.....	Huntsville.....
Ward, Harry.....	Harry Ward.....	Moberly.....

RAY COUNTY.

Blair, Andrew.....	Andrew Blair.....	Richmond.....
Bryant & Kine.....	S. G. S. Bean.....	Lakeview.....
Campbell, Margaret.....	W. Sickers.....	
Chenault, A. & R.....	A. R. Chenault.....	Henry.....
Crespin, E. E., Mrs.....	Crespin & Ward.....	Richmond.....
Fowler Coal & Mining Co.....	Fowler Coal & Mining Co.....	
Hubbell Coal Co.....	Hubbell Coal Co., Mine No. 10.....	".....
Hulett.....	Schooler & Thompson.....	".....
Huston, Jas.....	Jas. Huston.....	Lakeview.....
Kallenberger, J. J.....	J. J. Kallenberger.....	
Kansas & Texas Coal Co.....	Murlin Coal Co., Mine No. 30.....	Bevier.....
Loeven, Joseph.....	Jos. Loeven.....	Lakeview.....
Marshall & Johnston heirs.....	Jas. M. Edgar.....	
Mercantile Coal Co., Mine No. 7&17.....	Mercantile C. Co., Mines Nos. 7&17.....	St. Joseph.....
Murry, Jessie.....	J. Kraft & Sons.....	Henry.....
Pence Bros. & Calven.....	Pence Bros. & Calven.....	Richmond.....
Pence, Hughes & Gibson.....	Pence & Co.....	".....
Pickering, Joseph.....	Pickering Coal Co.....	".....
Rankin, W. D.....	A. F. Rankin.....	".....
	Mines 4, 5, 9, 12 & 14, Camden 1 & 2.....	".....
Richmond & Camden Coal Co.....	Richmond & Camden Coal Co.....	".....
Sevier, Chas.....	Ottman & Swope.....	
Starr, Alex.....	Frank Hemmer.....	Hardin.....
The Grimes Mine.....	Hugh Blair.....	Knoxville.....
Washington, A. L.....	S. H. Washington.....	Richmond.....
Wilson, Mary Mrs.....	Wilson Coal Co.....	".....

SALINE COUNTY.

Banks, Ira O.....	Ira O. Banks.....	Blackburn.....
Terrell, Henry.....	T. S. Maupin.....	Elmwood.....
Terrell, H. O.....	Tim Maupin.....	".....

ST. CLAIR COUNTY.

Company.	Operator.	Postoffice address.
Cook, Jas.....	Jas. Cook.....	Appleton City.....
Crowell, H. C.....	O. S. Butcher.....	Lowry City.....
Griggs, L. L.....	L. L. Griggs.....	.....
Hoover Mines.....	Thos. Greathouse.....	Osceola.....
.....	C. F. Seymour.....	.....
Kneirim, John.....	Geo. H. Kneirim.....	Deepwater.....
Oliver, Alex.....	W. F. St. Clair.....	Appleton City.....
Short Estate.....	J. M. Short.....	Iuka Springs.....
Sholz, J.....	W. H. Lane.....	Appleton City.....
Woodin, H. M.....	H. M. Woodin.....	Monegaw Springs.....

SCHUYLER COUNTY.

Galston, Ira.....	Ira Galston.....	Quen City.....
Kloke & Rosenteal.....	Bradburn & Co.....	Zolo.....

VERNON COUNTY.

Arthur Coal and Mining Co.....	Arthur Coal and Mining Co.....	Panama.....
Augur, F. B., Hill Mine.....	F. C. Augur.....	Moundville.....
Hubb.....	.....	.....
Baker Frank.....	Frank Baker.....	Sheldon.....
Central C. and C. Co. Mine No. 14..	Central C. and C. Co., Mine No. 14	Kasas City.....
19..	19	.....
Ewing, F. Y.....	Goodwin & Smith.....	Harwood.....
Jones, P. W.....	D. K. Perkins.....	Moundville.....
Lowes, J. A.....	J. A. Lowes.....	Sheldon.....
Mayberry, E. M.....	F. M. Mayberry.....	Harwood.....
Miller, J. F.....	A. S. Brown.....	Moundville.....
Radde, F. M.....	F. M. Radde.....	Harwood.....
Rush Coal and Mining Co.....	Rush Coal and Mining Co.....	Rich Hill.....
Vernon Coal Co.....	J. A. Gee.....	.....
Whitworth Chas.....	Chas. Whitworth.....	Moundville.....

ERRATA.

Page 40—Sixteenth line, "beefit" should be "benefit."

Page 40—Twenty-seventh line "nd" should be "see."

Page 45—Fourth line from bottom, should be "where."

Page 62—First line should read "drivers and two shot-firers and one trackman. From the above it will"

Page 91—Fifteenth line, "cart" should be "cast."

Page 100—Third line from bottom, "of" should be "for."

Page 124—Fourth line "hoising" should be "hoisting."

Page 132—Fifteenth line from bottom, "accentable" should be "acceptable."

Page 134—Last line "cnoditon" should be "condition."

Page 138—"Stay Coal Co." should be "Star Coal Co."

Page 138—"Arell & Serrat should be "Aull & Serrat."

Page 166—Tenth line "haveen" should be "have been."

Page 172—Twenty-second line, "cole" should be "coal."

